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# USSR Report

AGRICULTURE

No. 1388

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## USSR REPORT

## AGRICULTURE

No. 1388

## CONTENTS

## MAJOR CROP PROGRESS AND WEATHER REPORTING

Crop Progress in Omsk Oblast Summarized (M. Sil'vanovich; SEL'SKAYA ZHIZN', 6 Apr 83).....	1
Crop Progress in Omsk Oblast Surveyed (M. Sil'vanovich; SEL'SKAYA ZHIZN', 25 May 83).....	4
Spring Field Work in Kuybyshev Oblast Reviewed (V. Shalgunov; PRAVDA, 11 May 82).....	6
Improvements in Condition of Fields in the Bashkir ASSR (V. Pugachev; SEL'SKAYA ZHIZN', 19 Jan 83).....	8
Unusual April Weather (SOVETSKAYA ROSSIYA, 2 Apr 83).....	9
Preparation of Quality Seed Urged (A. Torichko; SEL'SKAYA ZHIZN', 15 Apr 83).....	10
Spring Field Work in Altay Kray (B. Prokhorov; SOVETSKAYA ROSSIYA, 13 May 83).....	13
Early Preparation for Harvest in Tajikistan Advocated (V. Prikhod'ko, N. Shatkov; SEL'SKOYE KHOZYAYSTVO TADZHIKISTANA, Jan 83).....	15
Inferior Preparation of Cotton Seeds in Tajikistan Scored (N. Ruzanov; SEL'SKAYA ZHIZN', 20 Mar 83).....	17
Higher Level of Cotton Growing in Tajikistan Urged (Kh. Saidov; KOMMUNIST TADZHIKISTANA, 11 Jan 83).....	19

Well-Organized Cotton Sowing in Tajikistan Discussed (V. Surkov; IZVESTIYA, 3 Apr 83).....	21
Spring Field Work Problems in Voronezh Oblast (N. Novoselov, et al.; TRUD, 28 Apr 83).....	23
Briefs	
Grain, Beet Production	25
Haying Operations	25
Early Spring Field Work	25
Collective Contract Method	26
Tambov Oblast Grain Plan	26
Buckwheat, Millet Sowings	26
Sugar Beet Sowing Completed	26
Mushroom Record-Holder	26
Early Field Work	27
Snow Plowing in Progress	27
Winter Crop Top Dressing	27
Early Grain Sowings	27
Efficient Organization	28
Brigade Contract	28
Training Courses	28
Cost Accounting Teams	28
Reserve Feed Supply	28
Zonal System	29
Soil Improvement Work	29
Rice Sowings	29
Interfarm Haying Complexes	29
Rice Sowing Competition	30
Combining of Operations	30
Efficient Use of Equipment	30
New Chick Pea Varieties	30
Cherry Trees in Bloom	30
Early Field Operations	30
Mass Cotton Sowing	30
Cotton Seed Preparation	31
Fertilization From Airplanes	31
Sowing in Amur Region	31
Dust Storm	31
Weather in Far East	31
Weather in Maritime Kray	32
Rice Sown	32
Early Grains Sown	32
Seed Processing Facility	32
Soy Production	32
Water Supply Irrigation	33
Steppe Harrowing	33
Ships Moving	33
Independent Links	33
Sowing in Altay	33



Wheat Sowing	34
Grain Harvest	34
Rape Harvest	34
Rostov Spring Fields	34
Barley Top Dressing	35
Shock Work	35
Osetian Planting	35
Corn Planting	35
Spring Planting	35
Industrial Corn Planting	36
Specialized Detachments	36
Dagestan Corn	36
Alfalfa Mowing	36
Irrigation Begins	36
Sowing Begins	36

#### LIVESTOCK FEED PROCUREMENT

Insufficient Production, Use of High-Protein Feed Concentrates in Moldavia (V. Ignat'yev, et al.; SEL'SKOYE KHOZYAYSTVO MOLDAVII, Apr 83).....	37
Search for Additional High-Protein Feed Resources in Belorussia (V. K. Chernikov; SEL'SKOYE KHOZYAYSTVO BELORUSSII, Apr 83).....	45
Cultivation of High-Yield Livestock Green Feed (D. Altunin; SEL'SKAYA ZHIZN', 30 Apr 83).....	48

#### REGIONAL DEVELOPMENT

Role of Scientific Production Organization in Moldavia Set Forth (M. F. Lupashku; SEL'SKOKHOZYAYSTVENNAYA BIOLOGIYA, Nov-Dec 82).....	52
Role of Science in Service of Food Program Set Forth (SEL'SKOYE KHOZYAYSTVO MOLDAVII, Nov 82).....	64
Call for Closer Ties Between Science and Food Production in Moldavia (SOVETSKAYA MOLDAVIYA, Feb 83).....	69

#### AGRO-ECONOMICS AND ORGANIZATION

Kolkhoz-Sovkhoz Collective Contracts Promoted (G. Martyshkin, Yu. Proskurin; EKONOMIKA SEL'SKOGO KHOZYAYSTVA, Apr 83).....	71
---	----

AGRICULTURAL MACHINERY AND EQUIPMENT

Features of Agricultural Tractors Specified (N. Mel'nikov; TEKHNIKA I VOORUZHENIYE: 'TRAKTORY DLYA SEL'SKOGO KHOZYAYSTVA", Mar 83).....	83
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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### CROP PROGRESS IN OMSK OBLAST SUMMARIZED

Moscow SEL'SKAYA ZHIZN' in Russian 6 Apr 83 p 1

[Article by M. Sil'vanovich, Omsk Oblast: "Applying to Zonal Conditions"]

[Text] For the farmers of Omsk Oblast this spring is noteworthy because crop rotations planned through zonal agrotechnical systems will be utilized on all plowland. At the present time the oblast's enterprises are completing preparations for sowing operations.

As we know, the past year was an extremely dry one for Siberians. Nevertheless, grain farmers were able to produce and preserve good seed. Eighty two percent of the seed was brought up to first and second class condition. In Isil'kul'skiy Rayon 76 percent of the seed is first class, in Pavlogradskiy--75 and in Novovarshevskiy--70 percent. Only first class seed will be used by the OPKh [Experimental enterprise] imeni Frunze, the Zhelannyy Sovkhoz and the Kolkhoz imeni Chapayev of Odesskiy Rayon.

The winter months were also stressful for repair men. The engineering services of many enterprises have made a positive evaluation of the work of RAPO [Further expansion unknown] soviets, which organized the efficient supplying of spare parts and assemblies for tractors and machines to shops. The repair of sowing equipment is basically being completed. This is an active period in checking readiness for moving out to the fields among units, competing tractor and field brigades and competing kolkhozes and sovkhozes.

In March agronomists' courses were organized in the eight best oblast enterprises and confirmed by the CPSU obkom and oblispolkom as schools of progressive experience. The speakers included scientists from SibNIISKhoz [Siberian Scientific Research Institute of Agriculture] and the agricultural institute and directors and specialists from the rayon and oblast agricultural administrations. At the end of the courses the head agronomists of sovkhozes and kolkhozes defended the agrotechnical measures they developed for the entire field period of the year.

The majority of grain collectives are ready to enter the fields. This year there was a great deal of snow. More organic fertilizer than previously was brought into the fields, enterprises are supported by new equipment and the

number of collectives working according to the method of brigade contracts is increasing. On significant areas industrial methods for raising corn and rape will be assimilated.

While completing an important stage in the introduction of crop rotations planned by zonal farming systems, specialists and enterprise directors are giving special attention in their work to unsolved problems. They feel that agronomists must become more demanding with regard to raising the effectiveness of capital repairs in fields during fallowing. These fields must maximally make up for their "vacation" in the course of the entire crop rotation. What about the knowledge of all the elements of zonal technology by each machine operator? Our objective must be to have the human factor operate according to high moral standards within the machine-man-field system.

Within this plan some problems are not being dealt with as required. Often people lose sight of the fact that intensive grain crop rotations with a larger proportion of bare fallow are weak in facilitating the potential fertility of the soil if insufficient quantities of fertilizer, especially organic fertilizer, are applied. Although manure is increasingly brought out in "windrows," qualitatively this type of work has undergone insignificant changes. Teams of horses have been replaced by tractor trailers but there is nothing with which to apply the fertilizer. Not a single manure storage facility has been built in the oblast. The introduction of the self-floating method of manure removal in livestock farming has not made the farm the ally of the field because it has become more difficult to meet the needs of the latter in this case. In addition, there is a shortage of tractor liquid manure carriers. Since the time that Sel'khozkhimiya [Agricultural chemical association] took over the transport of organic fertilizer into the fields this important process has become less and less under the control of the enterprises' agronomists.

Another no less important problem is the collection of varieties. In recent years Omsk Oblast has been in a privileged position in this regard. The breeders of the SibNIISKhoz and of the agricultural institute have produced many good varieties recently. These varieties have received a dependable stamp of approval on the fields of kolkhozes and sovkhoses as a result of their accelerated introduction in over 80 enterprises located in the oblast as well as far beyond its borders. The essence of the method lies in the fact that the propagation of promising varieties begins under production conditions with the simultaneous submission of varieties for testing by Gossortset' [State variety network].

This spring the new local grain varieties will occupy 1.9 million hectares in Omsk Oblast; moreover, the soil will be richer.

"This is the essential point in increasing yield," said the head agronomist of the oblispolkom agricultural administration A. Moroz. "In the south and the southern forest-steppe Omskaya-9 will remain the leader as before with 70 percent of the sowing area. In the northern forest-steppe 75 percent of the area will be sown in Novosibirskaya-67."

However, among producers of some areas such as the southern and southern forest-steppe zones, which are the main suppliers of grain, there are still voices heard demanding that breeders produce a variety analagous to Saratovskaya-29 in vegetative period and grain quality. No mercy is shown even to Omskaya-9 because it is a late maturing variety. It is true that it does have an analogue--Sibakovskaya-3, which matures 3-5 days before Omskaya-9 but is not superior to it in yield and grain quality. Everything points to utilizing this variety in the zone where Omskaya-9 is now sown and it should occupy no fewer than 200,000 hectares. A number of subjective factors affected the fate of this crop, however. First of all, the inspectorate of Gossortset' held back the regionalization of the variety for a year, motivated by the shortage of seed in the agricultural institute where the variety was developed. Further, for 2 years the question of the strength of the variety was not dealt with, although it is now said that there was no reason for this.

This year, with the regionalization of the variety and the goal of confirming it "in force" by the state committee on variety testing, demand for it has naturally grown. It turned out that the area reserved for the crop was 50,000 hectares. The agricultural institute, with its weak base of primary seed farming, cannot fully satisfy demand. This is an example of the fact that we cannot always limit ourselves to rebukes of breeders. In Omsk departmentalizing should be set aside and organizational-economic measures should be taken to help the institute and originator of primary seed farming to reproduce the seed of the promising variety.

There is also no justification for the fact that the area in hard wheat is decreasing. The good variety, Almaz, reached its apogee in 1981, when it occupied 56,000 hectares in its homeland. Since that time its area has diminished due to a number of inconsistencies. One of them is that the plan established by the board of the RSFSR Ministry of Agriculture was to sow 100,000 hectares in this variety in Omsk Oblast; however, the sales plan called for only 20,000 tons. The lack of correspondence between these two plans evidently calmed the directors of enterprises in the oblast--they decided they could fulfill the small plan by using a small plot of land. Meanwhile, the country's need for high quality seed requires taking on a heavier burden if the possibilities for this exist.

8228

CSO: 1824/375

## MAJOR CROP PROGRESS AND WEATHER REPORTING

### CROP PROGRESS IN OMSK OBLAST SURVEYED

Moscow SEL'SKAYA ZHIZN' in Russian 25 May 83 p 1

[Article by M. Sil'vanovich, Omsk Oblast: "On the Fields of Siberia"]

[Excerpts] This year the kolkhozes and sovkhoses of Omsk Oblast intend to harvest no fewer than 3.8 million tons of grain, or significantly more than on the average during the 10th Five-Year Plan. Prior to sowing calculations were made even more precise.

At the present time there is sufficient moisture in the soil. It contains a large number of nitrates; this is especially true for fallow. Experience demonstrates that under such conditions yield can be underestimated and can produce a large vegetative mass. We still remember 1979 when grain crops were subject to early fall frosts.

That year the high yield Omskaya-9 wheat variety taught us a serious lesson--the 40-quintal yield disappeared in the snow. At the present time up to 70-80 percent of the wheat area is sown in this variety. Meanwhile, in the last winter season compared to average data for a period of many years about 1,000 degrees of minus temperatures were not reached and it can be expected that by the end of summer nature will in some way compensate for the winter warmth.

What has been done in Omsk enterprises to save the harvest from possible catastrophes?

In early May a zonal meeting of farmers was held at which one of the main questions was the sowing schedule. A schedule that is too early was rejected long ago in Siberia. Today specialists still have not changed their opinion of this. However, the reserve of ~~compressed~~ sowing was discovered and is utilized as armament. A calculation of its duration considered the boundaries that could not be overstepped.

The outer limits for the conclusion of sowing operations were determined for each variety and each crop. Unique network schedules were developed according to which the start of sowing operations was determined by technical possibilities and the experience of machine operators in each enterprise, division and brigade. Many had to take their sowers into the fields several

days earlier than usual, and in the steppe Russko-Polyanskiy and Novovarshevskiy rayons farms almost took a risk by selecting an unusually compressed sowing schedule for Omskaya-9. But tested masters are at work here and their feeling for farming has never let them down

The precise calculation of schedules and controls over their fulfillment on the part of party committees and enterprise directors and thought-out cultural and domestic services to workers greatly facilitate the establishment of a favorable climate in the collectives of sowing units. Convincing examples of this can be found in Mar'yanovskiy, Sherbakul'skiy and Tavricheskiy rayons. The sowing pace here slowed suddenly due to rains. But nowhere was it necessary to work at night because from the very beginning work proceeded at a good pace and the sowing of wheat is coming to an end.

In Siberia May is cool. It is necessary to carry through sowing operations even though weeds have not germinated completely. For this reason intermediate cultivation 3-4 days prior to sowing has become the rule. The routes of sowing units are selected according to the cleanness of the fields. Somewhat higher sowing rates are utilized, which is done to encourage a more rapid maturation of grains. The crossover method is being used more this year than last in sowing.

Enterprises are already readying all available resources for treating crops with herbicides. Pre-shoot harrowing will be employed extensively.

A distinguishing feature of the current spring is the fact that many collectives are working in the fields on the basis of collective contracts.

8228

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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### SPRING FIELD WORK IN KUYBYSHEV OBLAST REVIEWED

Moscow PRAVDA in Russian 11 May 83 p 1

/Article by V. Shalgunov, Kuybyshev Oblast: "Reserves of a Hectare"/

/Excerpts/ Sowing operations in the steppe regions of the Volga area have commenced earlier than usual and in a confident and harmonious manner. The farmers in Kuybyshev Oblast have undertaken the task of reducing to the maximum possible degree the shortfall that has developed in grain since the beginning of the five-year plan and, compared to last year, lowering its consumption for forage purposes by 130,000-140,000 tons. A change has taken place in the structure of the feed fields and considerable increases have taken place in the sowings of peas, alfalfa and rape. Each hectare of land must be worked in a reliable manner so as to ensure fulfillment of the obligations for selling grain to the state and high productivity for the public herd.

The carrying out of skilful work with forage crops, which makes it possible to supply the state granaries with more grain, is the rule throughout all of Bezenchukskiy Rayon. This year the sowings of corn and perennial grasses are being increased by 2,000 hectares. Peas and soybeans occupy a worthy place in the crop rotation plan. According to estimates, an increase in the procurements of silage, haylage and hay of 13.5 percent will reduce the consumption of grain for livestock feed.

"Strengthening the feed base is promoting the successful solving of our chief task -- increasing the deliveries of grain to the country" stated the 1st secretary of the Bezenchukskiy Rayon Party Committee F. Yemel'yanov, "the leaders and specialists together are working along these two lines, having undertaken to carry out the requirements expressed during the recent conference on agricultural matters in the CPSU Central Committee. The plans call for 38 quintals of grain per hectare to be obtained from irrigated land and for the rayon's average yield to be 20.5 quintals. A complex of agrotechnical measures is being carried out in a timely manner. First class seed will be sown, liquid ammonia will be applied to 10,000 hectares and a top dressing is being applied to the winter crops from the air on an extensive scale.



The working plan for sowing operations was developed for 5-6 days. And it is being carried out successfully. Forty five teams and detachments, many of which are operating on the basis of collective contracts, are not wasting one day. The sowing machines contain new types of seed for the Volga fields -- Donetsk-8 barley, Astor oats, Neosypayushchiysya peas and other varieties. Visits to the farms have brought to light many kind words regarding the machine operators at the sovkhoses Ol'ginskiy, Iskra and Vasil'yevskiy, whose expertise and enthusiasm serve as an example in the campaign which is unfolding to achieve a high yield.

Since the very first days of the sowing campaign, the farmers in the oblast's Stavropol'skiy, Kinel'skiy, Volzhskiy and other rayons have performed in a thrifty and skilful manner. Here the fields are well tended and the culture of the work is high. The agronomic services of leading farms, based upon zonal and scientifically sound farming systems, have selected an optimum structure for the crops and are utilizing each hectare of arable land in an efficient manner. The experience accumulated by leading workers should be adopted by the kolkhoses and sovkhoses, for example those in Shentalinskiy, Sergiyevskiy and Khvorostyanskiy Rayons, where the quality of the work being carried out is not very good. The fields are becoming overrun with weeds and thus the yield per hectare is decreasing. The leaders and specialists of agroindustrial associations must make greater use of their rights and opportunities, restore order on the land and deal more strictly with those who are not carrying out their tasks well.

The experience of the land reclamation detachment of N. Duboshin at the Rodina Sovkhoz in Pestravskiy Rayon, which obtained high forage crop yields, is well known throughout the oblast. However, neighboring farms appear to be in no haste to make use of this experience. The corn and alfalfa yields are low. At the same time, grain occupies more than 40 percent of the feed balance. There is simply nothing available to substitute for it. Since the beginning of this present sowing campaign, a need existed for radically changing the situation and making active use for the public good of agrotechnical methods that have been well tested and which as the saying goes "are readily at hand."

The winter crops in the Volga steppe regions are pleasing to the eye. The grasses are growing well as a result of the spring warmth. Work is being carried out rapidly out on the fields where the seedlings have already begun to turn green. And in order for each hectare to be reliable and produce benefit, each farmer must invest both work and concern in it.

7026

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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### IMPROVEMENTS IN CONDITION OF FIELDS IN THE BASHKIR ASSR

Moscow SEL'SKAYA ZHIZN' in Russian 19 Jan 83 p 4

/Article by V. Pugachev, chairman of the republic's Sel'khozkhimiya Association, Bashkir ASSR: "Agrochemists True To Their Word"/

/Excerpts/ During the first 2 years of this present five-year plan, more than 35 million tons of organic fertilizer were moved out onto the fields of kolkhozes and sovkhoses in the autonomous republic and mineral fertilizers were applied to 7 million hectares, mainly to the drill rows during sowing operations. Owing to the difficult conditions experienced during the growing season, we devoted a great amount of attention, as never before, to the work of protecting the plants against pests, diseases and weeds. The farms made extensive use of waterproof corn seed.

The introduction of scientifically sound systems for applying fertilizers and chemical agents for protecting plants has commenced throughout the autonomous republic. The republic's planning-research station for the use of chemical processes in agriculture and the Ishimbay Agrochemical Laboratory carried out agrochemical tests on 1.3 million hectares and prepared cartograms on the nutrient content in the soils. The farms are being supplied in a timely manner with planning-estimates documentation for the capital repair of their fields.

Over a period of 2 years, the Sel'khozkhimiya Association carried out 70 million rubles worth of work. The cost of the chemical agents supplied for this period exceeded by 24 percent the volumes initially planned. It bears mentioning that the work of the rayon associations is evaluated not only in terms of the complete volume of services rendered but also in terms of the individual types of work. This produced positive results. Thus a weak area was the hauling of peat. And during the past 2 years 3 million tons, or the amount actually planned, were delivered to the fields. The 2-year task for the liming of acid fields was also fulfilled. During this period of time, we procured 1.64 million tons of local lime materials, we carried out soil improvement work on 41,000 hectares and on 60,000 hectares we carried out all-round agrochemical taming of the fields.

This year the agrochemists will increase considerably their work of employing chemical processes in agriculture and in this manner they will multiply their contribution towards raising the cropping power of the agricultural crops being grown on the fields of the autonomous republic.

## MAJOR CROP PROGRESS AND WEATHER REPORTING

### UNUSUAL APRIL WEATHER

Moscow SOVETSKAYA ROSSIYA in Russian 2 Apr 83 p 4

[Article: "April Fool's"]

[Text] If thermometers were not serious pieces of equipment for measurement, their reading on 1 April in Moscow could have been considered a cunning joke. On that day at about 4 p.m. summer temperatures were measured everywhere across the city--up to 18 degrees.

Springs have brought various surprises on this date, but something like this had not occurred in 100 years. There were snow storms and snows lying untouched. Sometimes it was extremely cold, as in 1879 with a temperature of minus 21 degrees.

It is true that 8 years ago there was a similar sorcerer's spring across our country. But then the entire year was a phenomenon--the warmest in a century. In Moscow temperatures reached 6.7 degrees (with a norm of 3.8). At that time, in 1975, April was also very warm, with temperatures of 16.5 degrees.

This year on the fateful date spring set a new record. What can we expect from the weather in the future? Based on what has happened so far, ahead of us we will have undesirable hot weather. During the first 10 days of April 1975 six maximal temperatures for the dates were recorded, the last of which was about 25 degrees.

Clouds are already forming over the current springlike weather. In Western Europe it has grown much cooler. In some countries it is as if winter has returned with serious snowstorms and late frosts.

In the coming days nature will clarify the character of future weather conditions here.

8228

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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### PREPARATION OF QUALITY SEED URGED

Moscow SEL'SKAYA ZHIZN' in Russian 15 Apr 83 p 1

[Article by A. Torichko, Altay Kray: "But What Kind of Seed?"]

[Text] As a result of many years of practical experience Altay farmers have become convinced that those kolkhozes and sovkhoses which sow their fields with high-class promising varieties will be successful in the harvest. There are many examples of concern for seed in the enterprises of Zav'yalovskiy, Mamontovskiy, Biyskiy, Krasnogorskiy and a number of other rayons, where varieties are renewed and replaced regularly and where the preparation of sowing material is well organized. These rules are being followed today. In these and a number of other rayons the grain seed tested in laboratories has received the highest evaluation possible.

In comparison with last year, for example, there was an 18 percent increase in the seed of promising varieties of spring grains in the kray and a 20 percent increase in the seed of the highest reproductions. There are over 394,000 tons of wheat seed in reserve of the varieties that perform best in the Altay--Tselinnaya-20, Omskaya-9, Novosibirskaya-67, Luganskaya-4, Almaz and Altayka.

Significant areas will be occupied by the productive Sakso and Omskiy Kormovoy oats varieties and the Obskiy barley variety. There will be a continuation of the reproduction of seed of the Vega and Rossiyanika spring wheat varieties and the Omskiy-80 and Tselinnyy-5 barley varieties. The sowing area in groats crops is increasing by almost 30,000 hectares.

A great deal of work has been completed and it would seem that there would be no cause for alarm. Still, it is too early to say that the harvest's "gold fund" in the Altay is really golden. According to the senior agronomist of the kray agricultural administration, I. Merkulov, the situation with grain seed in the kray is on the same level as last year. Over 88 percent of the seed meets first and second class standards, with 34 percent meeting first class standards. Still, there is not enough first-class seed and there is even less than last year. Two percent of the seed remains completely • unconditioned. From 4-16 percent of such seed is found in the enterprises of Yegor'yevskiy, Kytmanovskiy, Novichikhinskiy, Tyumentsevskiy, Tselinnyy, Volchikhinskiy and other rayons; in the kolkhozes and sovkhoses of Gorno-Altay Autonomous Oblast over half of the seed falls into this category.

In order to raise the quality of seed funds the kray's kolkhozes and sovkhoses have been allocated 23,000 tons of grain seed for exchanges, 8,000 tons in the form of loans and over 17,000 tons for selling. Unfortunately, in some places exchange operations are lagging behind. Gorno-Altay Autonomous Oblast is slow with its exports. Various reasons for this are given--some grain-reception points have not brought seed up to sowing condition. In Burlinskiy, Tselinnyy and Uelovskiy rayons and in the Gorno-Altay Autonomous Oblast difficulties arise with truck transport and the delivery of fuel. In solving these problems a great deal depends on the efficient work of specialists from the agroindustrial association who often demonstrate sluggishness.

An especially acute situation is developing with regard to supplying enterprises with the seed of legumes. There is a shortage of this seed in Novichikhinskiy, Tabunskiy and other rayons. In the kray as a whole there is an undersupply of 70,000 quintals of peas seed. Of the quantity that exists, over 5,000 quintals are not conditioned, with half of this amount being weed-infested.

"Three enterprises in our region--the Borovoy, Gorizont and Yablochnyy sovkhoses," says the chairman of the Krutikhinsk RAPO [Rayon Agro-Industrial Association], M. Preobrazhenskiy, "do not plan to sow peas at all because there is no seed."

This cannot be tolerated. Surplus seed can be found in the OPKh [Experimental model farm] imeni Dokuchayev and in some enterprises that produced a respectable harvest last year. Of course every director and specialist is concerned first about his own fields. But in the existing circumstances one must help one's neighbor. Peas seed could be shared by the enterprises of Zmeinogorskiy, Krasnoshchekovskiy, Zav'yalovskiy and other rayons.

Those who have found themselves in the role of suppliants should now, on the eve of sowing operations, learn from the masters and assimilate the experience of cultivating, harvesting and storing the seed of legume crops. Much that is helpful in this plan can be gathered from the Svetlyy Put' Sovkhoz of Pervomayskiy Rayon, for example, which I recently visited.

Each year this enterprise cultivates peas on 800-900 hectares, and this year it decided to sow this valuable crop on 1,000 hectares. After adjusting the technology of cultivating peas and supplying machine operators with special technology farmers here increased the productivity of this crop to 20-22 quintals per hectare. The enterprise now has a surplus of high quality seed in storage.

"In preparing for spring sowing," says the director of the sovkhos, A. Nekrasov, "we are putting great hope in the collective contract. For example, last year the independent link for corn cultivation headed by A. Petrov, collected 240 quintals from each of 400 hectares or 60 quintals more than on the average in the enterprise; the cost of a quintal was 34 kopecks less. Now independent links will be utilized to cultivate peas in addition to corn and sugar beets.

This year Altay farmers have been given a difficult but realistic task--to sell the state no fewer than 3.7 million tons of grain. Success will depend in part on the quality of the seed that is placed into the soil. While there is still time the deficiencies tolerated by some enterprises can still be corrected in preparation for the sowing of the "golden fund" of the harvest.

We are on the threshold of the sowing period, an intensive and responsible period in the struggle for the harvest during the third year of the five-year plan. Its successful completion will affect the great final results for Altay farmers to a considerable degree. Everything possible must be done to ensure that kolkhoz and sovkhos fields gladden us with a good harvest.

8228

CSO: 1824/371

## MAJOR CROP PROGRESS AND WEATHER REPORTING

### SPRING FIELD WORK IN ALTAY KRAY

Moscow SOVETSKAYA ROSSIYA in Russian 13 May 83 p 1

[Article by B. Prokhorov, Altay Kray: "Pace of Harvest Work"]

[Text] This year spring arrived early in the Altay. But then cold weather followed. The bad weather changed some of the plans of farmers. For example, at the present time fewer spring crops have been sown than by this time last year.

"In such a situation," said the senior agronomist of the kray agricultural administration, I. A. Merkulov, "what is required is a precise work pace, the mobilization of workers and the utilization of all the resources of Sel'khoztekhnika [Agricultural Equipment Association] and Sel'khozkhimiya [Agricultural Chemical Association]. This is being done."

The work volume is large. The Altay's plowing fields encompass 7 million hectares. On this area there are 2,600 sowing units joining 12,600 links. The tone is being set by 1,327 collectives working according to the method of the brigade contract. They are working 1,300,000 hectares of land.

"What are the characteristics of the current sowing period?" I asked of administrators, party workers and machine operators.

"There is more organization," was the answer I received. "Here a large role was played by our joint efforts to strengthen discipline in labor collectives. The brigade contract noticeably improves organization."

...Near the birch trees with their birds' nests I speak with the director of the feed producing brigade and member of the party committee of the Ob' Sovkhoz of Kalmanskiy Rayon, Kh. K. Shnar. Khristian Karlovich is a brave man. He decided to test the idea of the contract in the brigade, which consists of almost 40 persons. Such large collectives frequently fell apart.

"The contract helps to strengthen our ranks," said the brigade leader. "But in order for this to occur people must live by the laws of honor, conscience and friendship."



An experienced farmer, Khristian Karlovich knows how to place these principles at the foundation of the brigade's activity. The equity of common solutions is necessary. One tractor operator liked to complain. He was dissatisfied with everything. Others are already working while he is seeking out problems for himself. He was told, "Work, or else..." He threatened to go to the public prosecutor. But he did not go. Evidently he understood that the demands made of him were just even if strict.

It was necessary to accelerate the pace of water-retention operations. Existing equipment was counted and found to be inadequate. But would it be inadequate if considered all together? Why not use MTZ tractors for harrowing just because no one had used them for this purpose before? There are no trailers for them, but they could be made. This was done. Thus four more units were sent into the fields. In one day 1,500 hectares were harrowed--this had never occurred before.

The Altay region is extensive. In the foothills grains are being sown, including wheat, and in the steppe regions its mass sowing begins around the second 10-day period of May. In other words, field work is becoming more and more intense. Farmers become vexed by the irregular delivery of mineral fertilizers from the Perm'nefteorgsintez [Perm association of petroleum fertilizer synthesis] and the Kemerovo Azot Association. The Balakovskiy Chemical Plant was to deliver about 7,000 tons of granulated superphosphate, but only 300 tons were received from there.

8228

CSO: 1824/371



## MAJOR CROP PROGRESS AND WEATHER REPORTING

### EARLY PREPARATION FOR HARVEST IN TAJIKISTAN ADVOCATED

Dushanbe SEL'SKOYE KHOZYAYSTVO TADZHIKISTANA in Russian No 1, Jan 83 pp 9-10

/Article by V. Prikhod'ko, chief of the Administration of Mechanization and Electrification, and N. Shatkov, deputy chief of the Main Administration of Industrial Crops (Tajik SSR Ministry of Agriculture): "Future Harvests Must Be Prepared Today"/

/Excerpt/ The past year of 1982 proved to be exceptionally difficult for Tajikistan's farmers, especially for grain growers. The prolonged summer drought, unusually early precipitation and sharp temperature drop during the period of harvesting of agricultural crops complicated the situation in agriculture considerably. However, despite all the whims of nature, the year, for the most part, ended successfully. Unfavorable weather for agriculture occurs almost every year and should be considered an ordinary and natural phenomenon. Therefore, work in agriculture should be skillfully adapted to climatic adversities, that is, there is a need for a system approach and for an overall program maximally taking into consideration the entire complexity and mansidedness of agricultural production and encompassing biological, technical, technological, organizational, economic and social aspects.

Agricultural workers take this directive into consideration in their practical work. For example, farms in Matchinskiy Rayon, Leninabad Oblast, Moskovskiy Rayon, Kulyab Oblast and Kuybyshevskiy Rayon, Kurgan-Tyube Oblast interpret the created situation properly and, conforming to it, perform the entire work during the year. As a result, these rayons annually fulfill and overfulfill the established assignments for the sale of raw cotton to the state earlier than anyone. They utilize equipment much more productively. As a result of a widespread utilization of machines in cotton harvesting, many brigades in these rayons gathered the entire grown harvest in 12 to 15 work days and settled their accounts with the state.

Therefore, the thesis--one must prepare himself for the future harvest in advance--is of decisive importance. Only with a creative attitude toward the organization and performance of field operations is it possible to successfully overcome any difficulties and to fulfill and overfulfill the undertaken obligations for the production of products.

Winter months are a period of active work at kolkhozes, sovkhoses and inter-farm enterprises. The fight for the future harvest is waged everywhere. Many farms have provided themselves with sufficient seeds, are carting organic

fertilizers to fields, are cleaning the collector-drainage and irrigation systems, have begun reserve irrigation and in individual southern rayons have already begun the sowing of early spring crops.

In zones where there is little atmospheric precipitation (Leninabad and Kurgan-Tyube Oblasts) reserve moisture-accumulation irrigation for obtaining good sprouts is mandatory. However, farms in Shaartuzskiy, Kabodiyenskiy and Kumsangirskiy Rayons pay insufficient attention to this important measure.

The 1983 harvest also largely depends on how our fields are fertilized. Chemists must make maximum efforts to give the spring field as much mineral fertilizers as possible, primarily phosphorus fertilizers, whose shortage, especially for grain crops on farms in Dangarinskiy, Sovetskiy, Leningradskiy, Ura-Tyubinskiy and Ganchinskiy Rayons, is not felt the first year! In brief, the preparation of the future harvest is not only the work of farmers, but of their partners in the agroindustrial complex as well.

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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### INFERIOR PREPARATION OF COTTON SEEDS IN TAJIKISTAN SCORED

Moscow SEL'SKAYA ZHIZN' in Russian 20 Mar 83 p 1

/Article by N. Ruzanov, SEL'SKAYA ZHIZN' correspondent, Tajik SSR: "Imaginary Well-Being"/

/Text/ People in Tajikistan did not manage to plow fields after harvesting when cotton processing industry workers announced that seeds were ready for the new harvest. According to reports their quality was higher than during previous years. This is very important, because in many rayons cotton crops are severely affected by wilt. In Kulyab and Leninabad Oblasts the disease spread on more than one-half of the areas and in Tursunzadevskiy Rayon, on all fields. Owing to this, hundreds of thousands of tons of raw cotton are lost during some years.

An early treatment of seeds with the highly effective and universal preparation fentiuram on an adhesive basis is one of the important methods of wilt control. More than 28,000 tons of seeds were treated with it--more than determined by the assignment.

Unfortunately, a great deal of unfinished work in the preparation of seeds lies behind the imaginary well-being. It seems that not all plants have fulfilled the plan. Some of them have been cool toward this important work. For example, cotton processing enterprises in Kanibadamskiy and Ordzhonikidzeabadskiy Rayons have not yet completed cleaning and treatment. Part of the seeds are noncertified at the Shaartuz Cotton Plant. A number of farms have reported that seeds have been delivered to them with increased breakage. The negligible insurance reserve of seeds--it comprises only 20 percent--evokes concern.

Proper significance is not attached to the production of naked seeds. Whereas, for example, 4,000 to 5,000 tons were prepared 20 years ago, only 545 tons are prepared now. Kh. Khaskashev, chief of the Division of Procurement of the republic's Ministry of Cotton Cleaning Industry, admitted: Even this quantity can be imposed with difficulty on farm managers. In turn, the latter explain: It is risky to sow seeds without warming linters. They must be coated. Undoubtedly, "wrapped" in nutritive material they would find a big demand, but plants do not want to engage in this.

"If we had a scientific production association, which would engage in the selection, growing and cleaning of seeds and would coordinate work on strain

replacement, there would be no such a lack of responsibility," B. Sanginov, one of the republic's leading selectioners, corresponding member of the Tajik SSR Academy of Sciences, notes.

The lack of a single seed breeding service led to unfortunate results. In addition to the 10 varieties regionalized in the last few years 30 nonregionalized varieties were brought to the republic. As a rule, imported "foreign" seeds have a third, fourth and often fifth reproduction. It is not accidental that Leninabad Oblast, especially suffering from random nonregionalized varieties, often does not fulfill assignments for the procurement of raw cotton.

A plan for the provision of kolkhozes and sovkhoses with seeds prescribing a strict observance of order in this important matter appeared. The document was signed by U. Ya. Yakhshibayev, the republic's deputy minister of agriculture. How surprised I was when I saw his written instruction to the workers of Tajikistan's Ministry of Cotton Industry to ship seeds of the medium-staple Tashkent-1 variety to farms in Parkharskiy, Voseyskiy and a number of other rayons. It is affected by wilt more severely than others and, moreover, yields the lowest-quality fiber--of the sixth, seventh and even eighth types. Therefore, it is removed from production. At the same time, the high-yielding fine-fiber 6465-V variety is ignored. This is a deliberate reduction in the production of fiber of the third type. The geography of varieties with the first and second types of fiber, 8386-V, 8249-V and 8408-V, which have proved their value, is restricted unjustifiably in the republic. The following question arises: How are local interests coordinated with the interests of the entire national economic complex?

11,439

CSO: 1824/346

## MAJOR CROP PROGRESS AND WEATHER REPORTING

### HIGHER LEVEL OF COTTON GROWING IN TAJIKISTAN URGED

Dushanbe KOMMUNIST TADZHIKISTANA in Russian 11 Jan 83 p 2

/Article by Kh. Saidov, acting head of the Department of Theory of Mechanisms of the Tajik Polytechnical Institute, candidate of technical sciences: "In All Aspects"/

/Text/ Everyone knows that cotton is a profitable crop. But the fact that it is very "vulnerable" during gathering, storage and processing is mentioned less frequently and in vain. But we will discuss this later. First, let us discuss how legitimate the interest of specialists involved in the cultivation and industrial processing of cotton and in the improvement in the selection of cotton is. We shall state right away that there are very many problems in this area. The improvement in the selection of cotton and in its fiber, seeds and lint, as well as the organization of the procurement and processing of cotton --these problems seem independent only externally. In fact, the production of high-quality cotton is a single overall problem.

Do we obtain high-quality products from cotton? By no means always. This matter can be observed, using the Vakhsh group of rayons and cotton cleaning plants stationed there as an example. In particular, we shall examine the scale of regionalization of new selected cotton varieties, the conditions of output of high-quality products at local plants and, finally, the provision of cotton plants with skilled personnel.

According to the data of the Ministry of Cotton Cleaning Industry, more than 20 types of cotton selections were sown in the republic in 1976, 17, a year later and about 30, another year later. These were basically such varieties as Tash-1, 108-F, Reg-1, Reg-34, Tadzhikistan-1, AN-2 and others. Most of them were sown simultaneously in almost all the cotton sowing rayons in the republic.

The striving of selectioners for a widespread regionalization of their products is understandable. One can also understand farm managers who experiment boldly--will a new variety suddenly prove productive? Unfortunately, it is not taken into consideration that a simultaneous regionalization of a large number of varieties on this territory often lowers the quality of fiber and seeds. Furthermore, fiber and seeds of one selection in some cases sharply differ from another selection--in the length of the fiber, in the weight and size of seeds, in the strength of attachment of the fiber to the seed and, finally, in the strength of the fiber itself. Now we will recall that the machines of the cotton cleaning and textile industry must operate on every cotton variety under specific conditions. Unfortunately, as yet there is no universal equipment suitable for a simultaneous processing of different varieties.

It is clear that such a situation complicates the organization of the procurement process in many respects. In particular, it is intolerable that clamps are filled with cotton of varying selection, of different industrial varieties and of a varying degree of moisture and weediness. In practice, however, such a mixing of varieties is encountered often. The quality of fiber has been lowered significantly at cotton plants in the Vakhsh Valley in the last few years. For example, the sum of defects in fiber is much higher than the norm of the All-Union State Standard at the Kolkhozabad, Kurgan-Tyube and Shaartuz Plants. According to strict estimates these enterprises turn out more than one-half of their output with a lowered quality. In particular, at the Kolkhozabad Cotton Plant in the last 3 years the quality of fiber has met the norms of the All-Union State Standard only 15 percent. For this reason farms fail to receive millions of rubles. Thought should be given to this. The striving for the new must be balanced with the quality of output. It is necessary to more carefully test varieties for industrial resistance before placing them in fields.

The solution of this problem is also closely connected with the provision of cotton processing enterprises with specialists. Few are at cotton plants. Furthermore, specialists are not taken care of and retained in production. Party and trade-union organizations of enterprises and the Ministry of Cotton Cleaning Industry must give thought to this.

And the last thing. Taking into consideration the activization of detection of ever newer cotton selections, the increase in the demands of textile workers for the quality of fiber and the big volume of scientific research and organizational work on the further development of cotton growing, it is rightful to expect from the republic's Academy of Sciences an improvement in work coordination. This would help to unify the efforts of selectioners, cotton cleaners and textile workers in the accomplishment of an important national economic task--raising the development of cotton growing in Tajikistan to a higher level.

11,439  
CSO: 1824/346

## MAJOR CROP PROGRESS AND WEATHER REPORTING

### WELL-ORGANIZED COTTON SOWING IN TAJIKISTAN DISCUSSED

Moscow IZVESTIYA in Russian 3 Apr 83 p 1

/Article by V. Surkov, IZVESTIYA correspondent, Tajik SSR: "Cotton Growers Began Sowing"/

/Text/ Apricot orchards blazed up as live white and pink bonfires in Tajikistan's mountain valleys. The magical fire of blooming, as an eternal call, again served as a signal for the beginning of the hot spring harvest campaign. On nature's signal fields in valleys resounded with the rumble of tractors. The time of sowing of cotton--the main crop for local places--arrived. It is to be placed on an area exceeding 300,000 hectares.

The most valuable fine-fiber varieties, primarily the most promising 6249-V variety, will occupy one-third of all the cotton fields in the republic. It has been developed by Tajik selectioners and approved in production in the rayons of the Vakhsh Valley. From 1 kg of such fiber textile workers manufacture a record quantity--15 square meters of voile "extra," or the same quantity of elegant knitted fabric, of course, of an excellent quality.

Cotton of the new variety ripens much earlier than others (before the arrival of the season of fall rains) and is resistant to diseases. It is not the first year that many cotton growing brigades grow 45 to 50 quintals of raw cotton of the new variety per hectare. The introduction of the 6249-V fine fiber variety into production gives farms in Kurgan-Tyube Oblast tens of millions of rubles of additional profit every year.

The new scientific developments include the growing of perko in a mixture with V-116 rye and of Tajik-31 vetch in a mixture with oats and the cultivation of new varieties of triticale, wheat, soybeans and oats (developed in the republic). All this is introduced within the framework of cotton-alfafa crop rotations and in cotton fields as alternate crops. What do such crops give? Up to 250 or 300 quintals of green mass per hectare. This represents the production of valuable protein feed for animals at the early spring time when a special need is felt for it. This represents the first out of two or three annual harvests from one irrigated arable area. And how does the predecessor affect cotton? Quite favorably. Its yield per hectare increases by 2 or 3 quintals only as a result of the plowing of root residues of perko and rape.



In the meantime everyone rushes to the field to sow cotton. On the Kolkhoz imeni Zhdanov in Kumsagirskiy Rayon machine operators have moved 50 sowing units to plantations. With due regard for systematic presowing grass harvesting they have decided to sow the entire area assigned for cotton--2,610 hectares--in 6 days. Kolkhoz farmers see the final result of their labor in gathering no less than 37 quintals of fine silky raw cotton per hectare in fall.

The advanced brigades of Sher Aslonov and Mingtura Butayev plan to occupy their fields with cotton in 4 work days. The first has decided to gather 40 quintals of raw cotton per hectare on an area of 70 hectares and the second, to gather 50 quintals of cotton per hectare from a slightly smaller area! For several years this brigade has been a school of advanced experience for all Kurgan-Tyube Oblast. Here people learn to obtain year after year stable harvests of a record series--50 quintals of raw cotton and 150 quintals of grain (in two harvests) on irrigated arable land.

When these lines were traversing the usual path from the spring field to the newspaper page, the brigades of Mingtura Butayev and Sher Aslonov completed the sowing of cotton. A total of 3 work days were spent on it. The entire Kolkhoz imeni Zhdanov is now proceeding toward a successful conclusion of the cotton sowing campaign. It will now give the homeland 10,000 tons of raw cotton.

Many farms in Kumsangirskiy, Dzhilikul'skiy, Kolkhozabadskiy, Shaartuzskiy, Kabodiyenskiy and other rayons in southern Tajikistan began cotton sowing in a harmonious and organized way. The republic's farmers undertook to sell 910,000 tons of high-quality Tajik cotton to the state in 1983.

11,439

CSO: 1824/346



## MAJOR CROP PROGRESS AND WEATHER REPORTING

### SPRING FIELD WORK PROBLEMS IN VORONEZH OBLAST

Moscow TRUD in Russian 28 Apr 83 p 1

/Article by members of Truda Inspection Brigade in Voronezh Oblast: N. Novoselov, machine operator at the Bol'shevik Kolkhoz; I. Davydov, brigade leader of a tractor brigade at the Sovet Kolkhoz; A. Terekhova, chairman of the Kashirskiy Rayon Committee of the Professional Trade Union for Agricultural Workers; P. Varfolomeyev, TRUD correspondent: "Value of Each Hour"/

/Text Even such an early spring period, the likes of which had not been seen in this area over the past five decades, failed to catch the Voronezh farmers unawares. By the middle of February, all of the sowing and soil cultivation equipment had been moved up to the readiness line and the seed had been improved to sowing condition. For the very first time in the oblast, more than 1,000 newly created non-schedule teams had joined in the campaign to produce a fine harvest. The council of the oblast's agroindustrial association had developed a strategy and tactics for the spring field operations. The decision was made to carry out the sowing of early spring crops in just 70 working hours. Three thousand city-dwellers, all of whom had taken machine operator courses during the winter months, furnished assistance to the rural workers.

The grain growers in Kashirskiy Rayon, which our inspection brigade visited, had to sow early spring crops on 27,000 hectares. They resolved to carry out this task in just 50 working hours. The initial days of the field work indicated that the machine operators were holding to their promise. The workers in Kashirskiy Rayon carried out their harrowing of the winter crops, cultivation of the autumn plowed fields and their sowing work in an efficient manner. At the Bol'shevik Kolkhoz, we counted 22 units out on the fields. They were all in operation, there was no idle time and each machine operator was thoroughly familiar with his task and maneuvers. The refueling of the vehicles was conducted directly out on the fields, with the seed and fertilizers being supplied on a continuous basis. Whenever a breakdown occurred, a mobile workshop would appear and provide efficient technical assistance.

At first glance it would appear that everything was proceeding in a fine manner. But at the Bol'shevik and Sovet Kolkhozes, the machine operators and the leaders of the farms admitted that the RAPO /rayon agricultural production

association/ council was clearly not coordinating the activities of all of its elements. Serious complaints were being registered against the rayon Sel'khozkhimiya organization which had shown no concern for maintaining an adequate supply of fertilizer and Sel'khoztekhnika was also criticized sharply.

The chairman of the Bol'shevik Kolkhoz, I. Zolotarev, mentioned that all problems concerned with spare parts for the agricultural machines had up until now been solved by the farms themselves.

"It is true that we stored away everything that was needed" stated Ivan Mikhaylovich, "But the cost was high for sending machines and personnel to acquire the spare parts. Unfortunately, Sel'khoztekhnika is still operating according to the old principle: rather than it working for us, the farms must work for it."

"As early as the winter we evidenced concern for special clothing" stated machine operator N. Myazin entering the discussion, "We ordered overalls and jackets. And what do you think? The items they sent were big enough for Il'ya Muromets: from size 56 to 62. They were not suitable for any of us."

At the Sovet Kolkhoz, we met with an extremely despondent leader of a tractor brigade S. Arbuzov:

"Look here, you must see for yourselves" he said rather indignantly as he showed us a fuel pump for a DT-75 tractor, "Here is the rating plate, which states in black and white: 'The Paninskiy Mechanical Plant in Voronezh Oblast guarantees the capital repair work on pump No. 2049489 for a period of 18 months.' Our best machine operators, the Ushkov brothers, spent two days working on the pump following the capital repairs and still they could not get the motor to work. Thus a heavy tractor lies idle. And there is a great need for it at the present time. There is a shortage of hydraulic hoses and harrowing disks. We wrote to a number of authorities including the RSFSR Ministry of Agriculture and still we have not been supplied with a grain loader, for which there is an acute need. Thus we were forced into using six individuals for loading seed into the sowing unit. But regardless of how fast they operated their pails, the unit was still out of operation for an additional 10-12 minutes. If you multiply this amount of time by ten (roughly the number of times the sowing unit is loaded during a day's time), then it turns out that approximately 2 hours of time are lost each day.

7026

CSO: 1824/367

## MAJOR CROP PROGRESS AND WEATHER REPORTING

### BRIEFS

GRAIN, BEET PRODUCTION--The land has come to life one half month earlier than usual and these average Russian fields with their barely perceptible low ridges prevail and speed up the men working on them. The non-schedule organization of labor is being employed in all areas in Kalacheyevskiy, Kantemirovskiy, Liskinskiy and Ostrogozhskiy Rayons. In commenting upon the course of the field work, the deputy chief of the Voronezh Oblast Agricultural Administration I. Bondarenko noted: "For the very first time, an ammonia solution is being applied to the soil simultaneously with planting the spring crop seed. More than 150,000 tons of anhydrous ammonia were procured during the winter." Grain crops occupy 1.7 million hectares throughout the oblast. The farmers have vowed to harvest an average of 24 quintals of grain and to sell 1.46 million tons to the state. The technical crops and particularly sugar beets require special concern. In Voronezh Oblast, sugar beets have been planted on 206,000 hectares. And no less than 228 quintals must be obtained from each hectare if the vow to ship 4.35 million tons of the sweet roots to the state is to be fulfilled. Here it bears mentioning that in the case of both grain and beets the Voronezh workers are under a great obligation to the country. And today all possible measures must be undertaken to correct this situation. Spring prevails out on the fields. Today the field crop growers are carrying out a great amount of work in the interest of obtaining a good harvest. /by A. Starukhin/ /Excerpts/ /Moscow PRAVDA in Russian 24 Apr 83 p 1/ 7026

HAYING OPERATIONS--Voronezh--The steppe meadows along the upper reaches of the Don River are characterized by an abundant stand of grass. The entire adult population of neighboring villages is providing assistance to the mechanized teams and detachments in harvesting this wealth without losses. The decision concerning this mass participation in haymaking operations was handed down during recent village citizen meetings. /Text/ /Moscow GUDOK in Russian 25 May 83 p 1/ 7026

EARLY SPRING FIELD WORK--Lipetsk, 7 Apr--This year the snow disappeared from the fields earlier than usual and, as a result, spring work commenced out on the fields at an early date. The machine operators of the Kon'-Kolodezskiy Sovkhoz-Technical School were the first to commence soil moisture conservation work. The farmers of the kolkhozes imeni Kalinin, Pamyat' Lenina and other farms in Khlevenskii Rayon have commenced sowing their early grain and annual grass crops. /by G. Kolenchuk/ /Text/ /Moscow SEL'SKAYA ZHIZN' in Russian 8 Apr 83 p 1/ 7026

COLLECTIVE CONTRACT METHOD--Penza, 28 Apr--This year more than 1,000 sowing complexes are operating out on the oblast's fields. Taking advantage of the warm sunny weather, the farmers are striving to plant their seed in the awakening ground as rapidly as possible. Over the past few days, the daily output of the sowing units has exceeded 100,000 hectares. The grain growers in Tamalinskiy, Bashmakovskiy, Serdobskiy and a number of other rayons are carrying out their field work in a highly organized manner. The farmers are not lowering their work tempo at the present time. In the interest of ensuring that all work is carried out rapidly and in a high quality manner, progressive methods for organizing agricultural labor are being introduced here. A notable feature of this year's field work -- the use of collective contracts on an extensive scale. Six hundred and twenty eight brigades and teams are operating at kolkhozes and sovkhoses in accordance with this new method for labor organization. /by A. Andreyev/ /Text/ /Moscow SEL'SKAYA ZHIZN' in Russian 29 Apr 83 p 1/ 7026

TAMBOV OBLAST GRAIN PLAN--Tambov Oblast--The unusually early spring has inclined the farmers towards carrying out their work in an efficient manner and it has introduced corrections into the sowing schedule. The ground is ripening rapidly. The harrowing units were moved out onto the fields only recently and already the time for sowing is at hand. Importance is being attached to each moment of time. In carrying out the measures planned, the oblast's grain growers have assigned themselves the following task: to obtain a yield of 23 quintals from each hectare. To follow a course aimed at fulfilling the procurement plans for all of the food crops, including buckwheat and millet. This year the best lands have been set aside for the great crops. The seed which the grain growers are presently sowing in damp and well fertilized soil is of high quality. In addition to sowing those fields assigned for spring crops, the farmers must also repair the winter crop sowings. The machine operators are striving to complete their soil moisture conservation work as rapidly as possible. In many rayons the decision has been made to complete the sowing of early grain crops in just 60-80 hours. The Tambov grain growers, who last year delivered more than 1 million tons of grain to the country's granaries, are striving to ensure that this year's figure will be equally as great. /by A. Kat'kalov/ /Excerpts/ /Moscow SEL'SKAYA ZHIZN' in Russian 6 Apr 83 p 1/ 7026

BUCKWHEAT, MILLET SOWINGS--Tambov--The oblast's farmers have commenced the mass sowing of buckwheat and millet. Eighty thousand hectares of fertile arable land have been set aside here for these valuable food crops. /Text/ /Moscow TRUD in Russian 20 May 83 p 1/ 7026

SUGAR BEET SOWING COMPLETED--Penza--The oblast's farmers completed sowing their sugar beets 2 weeks earlier than usual. This crop has been planted here on almost 60,000 hectares. The extension of the growing season will raise the weight and sugar content of the roots. On a majority of the farms the beets are being cultivated using an industrial technology, with the brigades and teams operating on the basis of collective contracts. /Text/ /Moscow TRUD in Russian 30 Apr 83 p 1/ 7026

MUSHROOM RECORD-HOLDER--Recent rainfall in Penza Oblast stimulated the growth of spring mushrooms -- sponge mushrooms and turban-top mushrooms. Some of them

are true 'Gulliver's.' But, if you please, the record-holder among them, according to PENZENSKAYA PRAVDA, is a giant turban-top mushroom found in Zemetchinskiy Rayon. It is the size of a football and weighs almost 1 kilogram. /Text/ /Moscow TRUD in Russian 14 May 83 p 4/ 7026

EARLY FIELD WORK--Even the older residents of Belgorod villages could not recall it ever happening before. By the last 10-day period in March not only had the snow disappeared from the land but the land had warmed to such an extent that it was possible to commence the sowing of early spring crops and even sugar beets. By the end of the first 10-day period in April the sowing of early grain crops had been completed in practically all of the oblast's rayons, sugar beets had been sown on one half of the areas and a top dressing had been applied to 250,000 hectares of winter wheat, or roughly one half of the winter crop fields. The avalanche of warmth which burst in upon the central chernozem region did not catch the Belgorod farmers unawares. The councils of the oblast and rayon agroindustrial associations, relying upon non-schedule teams, had organized the work of all of the RAPO /Rayon Agroindustrial Association/ services in a manner such that the equipment and the machine operators could be moved out onto the fields one month earlier than the traditional periods. Since the initial days of the mass sowing operations, the work has been carried out in two shifts, with the engineering, chemical support and domestic services units performing their tasks in an efficient manner. The rural cooperators have organized more than 100 booths without a salesman at the field camps. The spring sowing operations in the oblast reached their zenith point in early April. The specialists believe that a fine reserve of strength has been created this year for obtaining a good harvest and for carrying out all agricultural operations in a more organized manner. /by V. Kulagin/ /Excerpts/ /Moscow IZVESTIYA in Russian 18 Apr 83 p 1/ 7026

SNOW FLOWING IN PROGRESS--Bashkir ASSR--In the steppe region, both sides of a road leading to the Kolkhoz imeni Salavat in Aurgazinskiy Rayon are lined with ridges of snow. "We are hurrying with our 'white plowing' work" stated the farm's chief agronomist R.Ya. Musalyamov, "As a result of frequent thaws, there was almost no snow on the arable land. Only in January was it possible to activate our snow plows. We have completed ridging the windrows on the entire sowing area of 4,300 hectares and we are now carrying out our second tilling operation." Snow has fallen in the Bashkir ASSR during the past few weeks. But it is known: if one or two days are overlooked, the wind can strip the fields clean. Thus the "white plowing" work is being carried out on a rush basis throughout the republic. It has been carried out on almost 2 million hectares. /by M. Merzabekov/ /Excerpts/ /Moscow SOVETSKAYA ROSSIYA in Russian 10 Mar 83 p 1/ 7026

WINTER CROP TOP DRESSING--Ufa, 11 Apr--Along a broad front -- from the air and on the ground -- the grain growers in the Bashkir ASSR are applying a top dressing to their winter crops. On farms in Sharanskiy and Ilishevskiy Rayons the pilots of agricultural aviation applied a top dressing to considerable areas of winter rye. /Excerpts/ /Moscow SEL'SKAYA ZHIZN' in Russian 12 Apr 83 p 1/ 7026

EARLY GRAIN SOWINGS--Bashkir ASSR--Sowing operations were begun earlier than usual on the fields in the Bashkir ASSR. Some rayons have already completed their sowing of early grain crops. /by M. Merzabekov/ /Excerpt/ /Moscow SOVETSKAYA ROSSIYA in Russian 14 May 83 p 1/ 7026



**EFFICIENT ORGANIZATION--Orenburg--**The kolkhozes and sovkhoses in Orenburg Oblast have commenced sowing their grain and forage crops. A distinctive feature of the present campaign -- well coordinated and highly organized work by all services of the agroindustrial complex. Detachments and teams which are operating on the basis of collective contracts are responsible for the fate of the harvest. /Text/ /Moscow SEL'SKAYA ZHIZN' in Russian 22 Apr 83 p 1/ 7026

**BRIGADE CONTRACT--Chelyabinsk--**Brigade contracts are being employed extensively on the fields in Chelyabinsk Oblast. At the present time, the sowing of grain, pulse and forage crops and potatoes is being carried out by the collectives of more than 60 brigades and 846 teams, all of which concluded contracts with the farms. They are cultivating approximately 1 million hectares of arable land -- one third of the oblast's spring crop fields. /Text/ /Moscow TRUD in Russian 18 May 83 p 1/ 7026

**TRAINING COURSES--Kurgan--**The leaders of cost accounting field crop husbandry subunits received training through courses organized by the oblast agricultural administration. This year 240 brigades and teams will operate according to the brigade contract principle. The training for leaders of production sectors will aid in more effectively introducing a progressive system of labor organization. /Text/ /Moscow GUDOK in Russian 27 Mar 83 p 1/ 7026

**COST ACCOUNTING TEAMS--Volgograd Oblast--**The status of cost accounting teams at the Kondrashevskiy Sovkhoz is typical for many kolkhozes and sovkhoses in Volgograd Oblast. Approximately 1,600 such collectives have moved out onto the spring fields. They have been assigned 2.6 million hectares, almost one half of all of the oblast's arable land. The early spring brought the machine operators out onto the fields earlier than usual. Less time was available for preparing for the busy spring period. However the course of the field work was affected to only a minor degree by the deficit in time -- the high level of organization displayed among the cost accounting teams and high labor productivity proved to be of great assistance. The oblast's farms fulfilled their plan for sowing early grain crops by 70 percent. Kotel'nikovskiy, Chernyshkovskiy and Oktyabr'skiy Rayons coped fully with this task. Soil cultivation work in behalf of the late spring crops is being carried out simultaneously with the sowing operations. In recent years, weeds have "consumed" a fair amount of the harvest. In particular, large quantities of weeds are to be found on farms in Uryupinskiy, Nekhayevskiy, Kikvidzenskiy and a number of other rayons. A low level of agricultural practices and poor tending of the fallow fields are taking their toll. Special capital investments are not required in order to eliminate these operational shortcomings. More often than not a requirement exists for a good and thrifty attitude towards the land, an attitude which is presently being displayed by the cost accounting teams during the sowing period. /by V. Stepnov/ /Excerpts/ /Moscow PRAVDA in Russian 16 Apr 83 p 1/ 7026

**RESERVE FEED SUPPLY--Astrakhan--**The workers in Krasnoyarskiy Rayon resolved to create a one and a half year's supply of feed on the farms. They place in operation feed plants and feed preparation shops and they are procuring and placing in storage granules and grass meal. A considerable portion of the alfalfa crop is being placed in storage as haylage. The example set by leading workers is being followed in other rayons throughout the oblast. /Text/ /Moscow GUDOK in Russian 25 May 83 p 1/ 7026

ZONAL SYSTEM--Omsk, 20 May 83 (TASS)--In accordance with the zonal system of farming Omsk grain farmers are now involved in strain changing on 2 million hectares of fields. This spring is moist but cool. For this reason, on fields that are ready sowing has begun using the Omskaya-9 wheat variety, which is most adaptable to such conditions. Following it will be another Omsk innovation--the Almaz hard wheat variety. Securing a large harvest of grains and feed, eliminating the debt of grain and livestock products to the state incurred last year--these are the goals of Omsk farmers this year.  
[Text] [Moscow SEL'SKAYA ZHIZN' in Russian 21 May 83 p 1] 8228

SOIL IMPROVEMENT WORK--Astrakhan--16 Feb--The warm weather has created favorable conditions for preparing for the field operations. The fertility detachments in Volodarskiy Rayon are especially active at the present time. They are taking advantage of each good hour of time to move organic fertilizers out onto the fields. Against an obligation calling for 78,000 tons, 60,000 tons of organic fertilizer have been made available for the future vegetable plantations and forage crops. Together with the fertility detachments of the rayon Sel'khozkhimiya Association, the machine operators at the Marfinets Sovkhoz over-fulfilled their tasks for hauling farmyard manure by twofold. The task of hauling local fertilizers has been carried out ahead of schedule at the sovkhoses Marfinskiy, Zelenginskiy and Volodarskiy, at the kolkhozes imeni Kurmangazy and Enbek and at other farms throughout the rayon. No less than 20,000 tons of humus -- a reliable foundation for obtaining a high yield -- are still to be applied to the fields in Volodarskiy Rayon prior to the start of the busy period of spring work. /by A. Golovko/ /Text/ /Moscow SEL'SKAYA ZHIZN' in Russian 17 Feb 83 p 1/ 7026

RICE SOWINGS--Astrakhan, 26 Feb--The unusually warm April weather accelerated the warming up of the soil in the rice check plots. The farmers in Kharabalinskiy Rayon were not slow in taking advantage of this fact. They were the first in the oblast to level off their check plots and sow rice. At the Leninskiy Put' Kolkhoz the units were moved out onto the fields during the early part of the month, with the seed being planted during the second 10-day period. The busy period of spring work is in full swing on farms in Kamyzyakskiy Rayon. Here the farmers of the Kommunar Sovkhoz are setting a fine example in terms of organizational ability. Prior to commencing their sowing work, they are thoroughly levelling off their check plots, carrying out disking and subsoiling of the autumn plowed land and applying a top dressing of fertilizers. On the average, 40 tons of humus and several quintals of mineral fertilizer are applied to each hectare. Herbicides have been applied to the soil throughout almost the entire area. /by A. Golovko/ /Excerpts/ /Moscow SEL'SKAYA ZHIZN' in Russian 27 Feb 83 p 1/ 7026

INTERFARM HAYING COMPLEXES--Astrakhan--Haying operations have commenced on the oblast's meadows. Feed procurement work is being carried out in Limanskiy, Yenotayevskiy and Narimanovskiy Rayons by interfarm complexes, created on the basis of a decision handed down by the councils of agroindustrial associations. The schedules for cutting down the grasses have been shortened here and, as a result, the high quality of the grasses is being retained. /Text/ /Moscow GUDOK in Russian 8 May 83 p 1/ 7026

RICE SOWING COMPETITION--Mista--The rice growers of Oktyabr'skiy Rayon in the Kalmyk ASSR commenced their sowing operations one and a half weeks earlier than usual. A competition has unfolded among the machine operators for shortening the schedules and achieving high quality sowing work. /Text/ /Moscow SEL'SKAYA ZHIZN' in Russian 16 Apr 83 p 1/ 7026

COMBINING OF OPERATIONS--Ulyanovsk--The Ulyanovsk machine operators, who have commenced their mass sowing of spring crops, are making maximum use of the technical potential of their machines and mechanisms. Many farms are combining technological operations on an extensive scale. The farmers are carrying out a number of operations simultaneously: pre-sowing cultivation, harrowing, sowing of grain crops and applying a top dressing of mineral fertilizer to the fields. This is aiding the grain growers in that it is shortening considerably the amount of time required for carrying out the various operations. /Text/ /Moscow TRUD in Russian 28 Apr 83 p 1/ 7026

EFFICIENT USE OF EQUIPMENT--Ulyanovsk--The Ulyanovsk farmers are employing their sowing equipment in a highly efficient manner. The seed has already been planted on an area in excess of 500,000 hectares. At the same time, work continues with regard to applying a top dressing to the winter crop and perennial grass sowings. /Text/ /Moscow TRUD in Russian 28 Apr 83 p 1/ 7026

NEW CHICK PEA VARIETIES--Saratov--This spring the farms in Krasnokutskiy Rayon in the Volga region are expanding their sowings of the new chick pea variety Krasnokutskiy-123. This variety was developed at a local plant breeding-experimental station of the Scientific Research Institute of Agriculture for the Southeast. For example, last year the farmers at the 40 Let Oktyabrya Kolkhoz set aside 80 hectares for this crop and obtained a high yield of beans from them. /Text/ /Moscow IZVESTIYA in Russian 18 Apr 83 p 1/ 7026

CHERRY TREES IN BLOOM--Novouzensk--The cherry trees in the orchards have commenced blossoming -- the time is at hand for sowing the late crops. In keeping with this phenological sign, the machine operators on steppe farms in the Volga region have moved their sowing units out onto the fields. /Text/ /Moscow SOVETSKAYA ROSSIYA in Russian 6 May 83 p 1/ 7026

EARLY FIELD OPERATIONS--Saratov--The farms in Novouzenskiy Rayon -- the most remote rayon in the steppe Volga area -- were the first in the oblast to complete sowing their corn for grain. Feed varieties of this crop have been sown on one half of the tracts. A year ago at this time the corn growers had only succeeded in moving their sowing machines out onto the fields and yet today cultivators are already being used to till the green corn seedlings. The tending of the crops has commenced and watering is being carried out in those areas where small leaves have appeared. Early sowings, industrial tilling of the fields and irrigation serve as a guarantee for the steppe workers that the planned grain yield -- 40 quintals per hectare -- will be obtained. /Text/ /Moscow GUDOK in Russian 8 May 83 p 1/ 7026

MASS COTTON SOWING--A bright spring sun shines over Tajikistan's fields. Kolkhoz and sovkhoz machine operators are in an excellent mood. The mass sowing of cotton has begun. Farmers try to carry it out at the best agrotechnical time. /Text/ /Moscow SEL'SKAYA ZHIZN' in Russian 15 Apr 83 p 1/ 11,439



**COTTON SEED PREPARATION--Kulyab--**The collective of the head enterprise of the Kulyab Cotton Cleaning Association completed the shipment of cotton seeds of medium-staple varieties to farms in Gissarskiy, Tursunzadevskiy, Kolkhozabad-skiy, Moskovskiy, Sovetskii and Parkharskiy Rayons. "Our association is the main supplier of cotton seeds of medium-staple varieties in the republic," M. Rasulov, its director, says. "Every year we prepare about 3,000 tons. The fate of the harvest depends on the quality of seed preparation. Taking this into consideration, we pay principal attention to the quality of seed preparation. Basically, these are elite seeds of the first and second reproduction." The preparation of seeds of fine-staple Druzhba cotton is being completed. All of them have been checked for germination and are resistant to pests and diseases. This year we have changed the schedule of seed delivery. Previously, farms carted out seeds in March and even in April, citing the lack of preparation of storage facilities. Now they select them strictly according to schedule. The association collective plans to fully complete the delivery of seeds to the oblast's farms by 20 February. [Text] [Dushanbe KOMMUNIST TADZHIKISTANA in Russian 15 Feb 83 p 1] 11,439

**FERTILIZATION FROM AIRPLANES--Khabarovsk--**Agricultural aviation planes are completing productivity flights over Far Eastern fields. This year with the help of planes it is planned to cultivate crops on an area of over 1 million hectares. The "winged farmers" will apply mineral fertilizer to grains, rice, soybean and vegetable plantations and will complete non-radical top-dressing of plants. [Text] [Moscow KRASNAYA ZVEZDA in Russian 1 Mar 83 p 1] 8228

**SOWING IN AMUR REGION--Khabarovsk--**The enterprises of the southern sections of the Transamur region have begun sowing grain crops--barley, oats and wheat. A precise sowing schedule was worked out by rayon agroindustrial enterprises created everywhere. Links and brigades have concluded agreements involving collective contracts which foresee the joint responsibility of grain farmers and enterprise directors for the harvest. Mechanized units equipped with powerful tractors, wide units and other technology are operating in sovkhoses. Transamur farmers have decided to complete sowing in 10 work days. [Text] [Moscow GUDOK in Russian 29 Mar 83 p 1] 8228

**DUST STORM--Khabarovsk, 18 Apr--**A dust storm hit the southern regions of the Transamur today. A similar phenomenon was registered here a quarter of a century ago. Cyclonic whirlwinds caused by the meeting of warm and cold air masses from the Baykal and Arctic regions raised a dust column that was three-fourths of a kilometer high over Mongolia. In less than 1 day storm winds moved this gray mass to Khabarovsk Kray and Amur Oblast. Because of timely warnings building, transportation and other enterprises did not suffer any material losses. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 19 Apr 83 p 1] 8228

**WEATHER IN FAR EAST--**April brought strong winds and torrential rainfall to the Maritime Kray, Amur Oblast and Khabarovsk Kray. Two powerful cyclones, one on the continent and the other over the Sea of Japan, are especially forceful right now. In the Maritime Kray wind gusts reach 33 meters per second and rains are continuing. Precipitation in Amur Oblast since early April surpassed the monthly norm sixfold. Nothing like this has been seen here since 1914. The work of transportation workers and builders has become more complicated and spring sowing has come to a halt. City enterprises have sent kolkhozes and sovkhoses hundreds of trucks to help deliver feed to livestock farms. The struggle against the raging bad weather continues. [Text] [Moscow SOVETSKAYA ROSSIYA in Russian 30 Apr 83 p 4] 8228

WEATHER IN MARITIME KRAY--In the Maritime Kray this spring is much like any other. In April good weather was interrupted by a powerful cyclone and in some places there were 100 millimeters of precipitation. Leaving their units, farmers began to eliminate losses brought about by the bad weather. They restored electrical lines and repaired damaged livestock and other facilities. May was sunny and warm and mechanized detachments once again entered the fields. "Our goal," said the deputy director of the kray agricultural administration, B. K. Godun, commenting on the course of field work, "is to rapidly reestablish a high pace of spring work and to complete the harrowing of previously sown wheat fields and vegetable and potato plantations according to a schedule." Hurricane winds and rains pummeled the earth and a crust formed on it. Still special attention is being given to rice, the basic crop of the Maritime Kray. It is sown on over 47,000 hectares. The country's Foodstuffs Program has forced farm administrators to develop the branch intensively. Considerable reclamation resources are being directed at the weakest link in production--the renovation of old rice fields. All rice sowing enterprises in the kray are sending reports about the increasing sowing pace. Utilizing progressive methods the machine operators of Khorol'skiy, Khankayskiy, Spasskiy, Chernigovskiy and Kirovskiy rayons are surpassing output norms. Powerful technology operates around the clock. The rice farmers of the Maritime Kray are sure that the goals for the sale of the valuable grain to the state will be met this year. [By N. Artapukh] [Excerpts] [Moscow SEL'SKAYA ZHIZN' in Russian 11 May 83 p 1] 8228

RICE SOWN--Vladivostok--The farmers of the Maritime Kray have begun sowing rice. Good quality seed is being placed in well-fertilized soil. Collective contracts are being introduced in many enterprises this spring. Mechanized brigades which have moved to this system of labor organization have become masters of assigned plantations with complete rights. [Text] [Moscow SOVETSKAYA ROSSIYA in Russian 6 May 83 p 1] 8228

EARLY GRAINS SOWN--Vladivostok--In the southern regions of the Maritime Kray the sowing of early grains has begun. Farmers are completely ready for the spring field work. Since fall over 500,000 hectares have been plowed and over 4.5 million tons of organic fertilizer have been taken out into the fields. All mechanized sowing units have been supplied with all of the necessary equipment and cadres have been selected and trained. It is the goal of farmers to complete the sowing of early grains in 8-10 days. [By V. Sungorkin] [Text] [Moscow SOVETSKAYA ROSSIYA in Russian 2 Apr 83 p 1] 8228

SEED PROCESSING FACILITY--Vladivostok--A comprehensive point for the processing and storage of grain seed has been put into operation in the Rassvet Sovkhoz of Khorol'skiy Rayon, the Maritime Kray. Here grain is brought up to sowing standards with the aid of machines. [Text] [Moscow TRUD in Russian 19 Feb 83 p 1] 8228

SOY PRODUCTION--Vladivostok--The utilization of industrial technology in the Maritime Kray will almost double the sowing pace for soybeans. The enterprises of the fertile Razdol'nenskaya and Khankayskaya valleys were first to begin sowing operations yesterday. Over 300 broad sowers are operating in the fields; this is almost one-third more than last year. [Text] [Moscow TRUD in Russian 17 May 83 p 1] 8228

WATER SUPPLY IRRIGATION--Although the cleaning of cotton seeds was completed in the republic, shortcomings in their preparation for sowing were allowed. Cases of violation of treatment technology were detected. Special attention was drawn to the need for moisture supply irrigation, leaching of saline land and preparation of the irrigation network for the repair of pumping stations and hydraulic structures. In connection with the expected water shortage in the basins of the Syrdarya and Amudarya Rivers the problems of preparation of irrigated land, of the reclamation network and of structures should be in the center of attention of the Ministry of Land Reclamation and Water Resources, of the Ministry of Agriculture, of the Ministry of Fruit and Vegetable Industry and of local soviets and economic bodies. The tasks of agricultural workers concerning an exemplary sowing, the establishment of the basis for a high harvest of all agricultural crops and the fulfillment of adopted obligations were determined. /Excerpts/ /Dushanbe KOMMUNIST TADZHIKISTANA in Russian 6 Mar 83 p 1/ 11,439

STEPPE HARROWING--Barnaul--The farmers of the steppe regions of the kray have begun harrowing fields. In most kolkhozes and sovkhoses this work has been organized in two shifts. Fuel supplies and the necessary equipment for the technical care of machinery were taken out into the fields ahead of time. [Text] [Moscow SOVETSKAYA ROSSIYA in Russian 22 Apr 83 p 1] 8228

SHIPS MOVING--Barnaul--Regular navigation has begun on the largest waterway of Western Siberia--the Ob River. During the third year of the five-year plan the river workers of the Altay must complete a large volume of work. Above-plan goals alone include completing 3 million ton-kilometers and processing 15,000 tons of freight for national economic purposes. [By A. Torichko] [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 2 May 83 p 4] 8228

INDEPENDENT LINKS--Barnaul, 3 May--In the days near the holiday of 1 May the machine operators of the Altay completed operations to retain soil moisture on their second million hectares. Dozens of harrowing units are entering the fields daily in the Shipunovskiy, Yegor'yevskiy, Rodinskiy and other rayons of the kray. Many enterprises have organized independent links of field workers who are leading the struggle for great final results. This year Altay grain farmers are to harvest almost 7 million tons of grain, over 700,000 tons of sugar beets, 60,000 tons of sunflowers, 175,000 tons of potatoes and 84,000 tons of vegetables. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 4 May 83 p 1] 8228

SOWING IN ALTAY--Barnaul, 7 May--Altay grain farmers began sowing early grains and legumes as well as feed mixtures and industrial crops after completing operations to retain moisture on 4 million hectares in a compressed period of time. The first hundred hectares of pure peas and oats and mixtures with vetch, sunflowers and sugar beets have been sown by the farmers of Loktevskiy, Rubtsovskiy, Kur'inskiy, Smolenskiy, Zmeinogorskiy, Pervomayskiy and other rayons. This year the spring fields of the Altay will be worked by over 2,600 sowing units, including 1,327 independent brigades and links. They have been assigned 1.3 million hectares of plowland. [By A. Torichko] [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 8 May 83 p 1] 8228

WHEAT SOWING--Barnaul, 14 May--Almost 3 million hectares of wheat will be sown this year in the Altay and three-fourths of the area will be sown in new and promising varieties. A long and cold spring changed the course of field work and for this reason the kray's farmers are creatively approaching the distribution of the basic industrial crop. Among the first to begin sowing wheat were the grain farmers of the foothill Altayskiy Rayon. High quality field work is being done in the Sovetskaya Sibir' Sovkhoz and the Vostok Kolkhoz, where the independent link headed by A. Nechayev is well-known for its highly productive work. [By A. Torichko] [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 15 May 83 p 1] 8228

GRAIN HARVEST--Farmers of Stavropol Kray have committed themselves to obtaining an average of 24 quintals of grain per hectare this year. It is intended to increase the gross yield to 4.7 million tons and to produce the production cost by 2.5 percent. Autonomous financing, to which a great deal of attention is being devoted in the republic, will help considerably in achieving this goal. Spring came quickly to Stavropol Kray, with dry winds blowing over the fields. There was not very much rain in the autumn either. Some of the winter crops did not survive. They had to be replanted and underplanted on almost a half million hectares. This expanded the area in spring crops--it will occupy almost 1.8 million hectares. Because of this the number of planting complexes has been increased from 900 to 1039. [Excerpts] [Moscow PRAVDA in Russian 18 Apr 83 pp 1-2] 11772

RAPE HARVEST--Stavropol--On the fields of Stavropol Kray winter rape is ripening at times that are best for planting corn. Having begun to mow it, the machine operators of the kolkhozes and sovkhoses are immediately preparing the released areas for planting corn seeds. Two harvests a year from the same land--this is an important reserve for increasing the supplies of feeds and ensuring stable productivity of the dairy and meat herds. This year 40,000 hectares of arable land were planted in winter rape. The prolonged dry spell during last autumn, true, caused one to be concerned. But the Stavropol workers did everything necessary to rectify the situation. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 4 May 83 p 1] 11772

ROSTOV SPRING FIELDS--Rostov Oblast--Applying moisture-saving agrotechnology, the leading rayons of Rostov Oblast are laying a solid basis for the harvest on the spring fields. It has become extremely warm on the steppes of the Don. The soil is ripening with each hour. Thousands of sets of equipment have gone out onto the fields. The farms of Sal'skiy Rayon planted the early spring crops in little more than 3 days. They were followed in this work by the kolkhozes and sovkhoses of Yegorlyk'skiy, Tselinskiy and Peschanokop'skiy rayons. The planting front is rapidly moving to the north of the oblast. This spring the Don farmers will have to "repair" the winter crops and plant early spring crops and grasses on more than 2.3 million hectares. Without extending the deadlines it will be necessary to do twice as much planting as last year. Grain growers and specialists of other rayons of the oblast could learn a great deal from the Sal'skiy farmers. But, as we see, not everyone takes advantage of advanced practice and useful lessons. The oblast people's control committee revealed serious shortcomings on a number of kolkhozes, sovkhoses, grain receiving enterprises and agricultural

Departments of the oblast. Managers and specialists were to blame for the fact that the seeds were not promptly prepared for planting on certain farms of Ust'-Donetskiy, Konstantinovskiy, Oblivskiy and other rayons and at the Kagal'nitskiy and Kuberlevskiy elevators of the oblast grain products administration. The guilty parties were punished, of course, but these mistakes could have been avoided if everyone had done his work and remembered that the land cannot be deceived: you get what you put into it. [Excerpts] [Moscow SEL'SKAYA ZHIZN' in Russian 30 May 83 p 1] 11772

BARLEY TOP DRESSING--Rostov-on-Don--After the warm spring rains the fields planted in spring barley were covered with an emerald rug. The area planted in this crop in the oblast has now been considerably increased, and there has been an expansion of the areas planted in the most productive and draught resistant high-protein strains, Zernogradskiy-86 and Zernogradskiy-73. They were isolated by the Don selection center. Both strains are resistant to diseases, bush out well, and produce high grain yields--from 46 to 63 quintals per hectare. The strains are responsive to fertilizers. Taking advantage of these valuable biological properties, the farmers of the oblast are now doing root dressing of the planted areas with nitrogen and phosphorus fertilizers. The largest areas of barley were top dressed on the farms of Tselinskiy, Sal'skiy, Matveyevo-Kurganskiy and Azovskiy rayons. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 13 May 83 p 1] 11772

SHOCK WORK--Rostov-on-Don--Ten days of shock work for preparing feeds began today on the farms of the Don. The abundant May rains generously watered the land and accelerated the growth of grasses. It is planned to create a reliable supply of feeds. The changeover of the feed procurement detachments to the contract system of labor organization contributed to the accelerated work rates. [Text] [Moscow SOVETSKAYA ROSSIYA in Russian 21 May 83 p 1] 11772

OSETIAN PLANTING--The kolkhozes and sovkhoses of Northern Osetiya which are located in the foothills of the Central Caucasus have begun planting. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 14, Apr 83 p 3] 11772

CORN PLANTING--Mass planting of corn has been started in the mountain regions of Northern Osetiya. More than 100 specialized subdivisions which apply brigade autonomous financing are working on the fields. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 17, Apr 83 p 4] 11772

SPRING PLANTING--Checheno-Ingush ASSR--It is mass planting time on the spring fields of the Checheno-Ingush ASSR. The farms are continuing to tend the winter crops and working on the vegetable plantations, orchards and vineyards. One of the largest reserves for increasing productivity is good treatment of the fields with organic and mineral fertilizers. The Ministry of Agriculture has announced that about 1.1 million tons of fertilizer and compost have been shipped onto the fields for the harvest--twice as much as in the first quarter of last year. They not only give nutrition to the plants, but also help to retain moisture, of which there is a shortage even now. Trying to increase their contribution to the country's Food Program, farmers of the Checheno-Ingush ASSR have committed themselves to increasing the productivity of the fields in the third year of the five-year plan and increasing the gross grain yield to 500,000 tons. [Excerpts] [Moscow SEL'SKAYA ZHIZN' in Russian 23 Apr 83 p 1] 11772



INDUSTRIAL CORN PLANTING--Ordzhonikidze--Farmers of Northern Osetiya completed the planting of corn at the best agrotechnical times and in 10 working days. This is the result of extensive introduction of industrial technology for the cultivation of the main grain crop in the autonomous republic. A special set of equipment and extensive application of fertilizers and herbicides make it possible to completely eliminate manual labor on the planted areas and considerably reduce the production cost of grain. [Text] [Moscow SOVETSKAYA ROSSIYA in Russian 6 May 83 p 1] 11772

SPECIALIZED DETACHMENTS--Nal'chik--Farmers of the Kabardino-Balkar ASSR have begun planting corn. This year every third hectare of arable land has been allotted to this valuable crop. About 300 specialized detachments have taken on responsibility for the new harvest. For the first time they are applying industrial technology for cultivation and brigade autonomous financing. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 13 Apr 83 p 1] 11772

DAGESTAN CORN--Makhachkala--In the northern zone of the maritime valley of Dagestan they have begun mass planting of corn--one of the main feed crops of the autonomous republic. This year the fields are assigned to autonomously financed teams. It is intended to plant corn on more than 50,000 hectares of arable land--considerably more than in preceding years. [Text] [Moscow SOVETSKAYA ROSSIYA in Russian 22 Apr 83 p 1] 11772

ALFALFA MOWING--Makhachkala--Farms of the maritime regions of Dagestan have begun mowing alfalfa and rape. All teams of the harveting conveyor are now operating according to the plan "field-farm." This organization of the work provides for a continuous cycle--from mowing to storing up the haylage--and reduces the time periods for harvesting the grasses. On the majority of the farms of the autonomous republic feed production has been separated into an independent branch. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 9 May 83 p 1] 11772

IRRIGATION BEGINS--Barnaul--Altay land reclamation workers began spring irrigation work yesterday. They must irrigate 63,000 hectares of plantations and provide water for 25,000 hectares of dry-farming lands and for almost the same area of estuaries. Masters of irrigation have been organized into links. Over half of reclamation workers follow the independent system of wage payments. [Text] [Moscow TRUD in Russian 11 May 83 p 1] 8228

SOWING BEGINS--Biysk--The machine operators of the eastern and foothill regions of the Altay have begun sowing grains and legumes on a mass scale. Farmers decided to complete the work in 100 hours. This is facilitated by the large-group utilization of technology and the work of mechanized brigades and links according to a single order. [Text] [Moscow TRUD in Russian 13 May 83 p 1] 8228

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## INSUFFICIENT PRODUCTION, USE OF HIGH PROTEIN FEED CONCENTRATES IN MOLDAVIA

Kishinev SEL'SKOYE KHOZYAYSTVO MOLDAVII in Russian No 4, Apr 83 pp 31-34

[Article by V. Ignat'yev, head of livestock feeding department; S. Kilimar, head of Cattle Husbandry Laboratory at Zarya Scientific Production Association; S. Chernyy, department head at Progress Scientific Production Association; G. Semanin, head of the Scientific-Production Laboratory at the Moldptitseprom Scientific Production Association: "Problems Concerned With Efficient Use of Concentrated Feeds"]

[Text] Concentrated feed constitutes more than 50 percent of the feed balance for animal husbandry in Moldavia, with the principal portion being represented by corn, barley and wheat, that is, products which form the country's food fund. In this regard, tremendous importance is attached to those problems associated with the efficient and thrifty consumption of concentrated feed in animal husbandry.

An analysis of statistical accounting reveals that over the past decade the consumption of concentrates to satisfy the requirements of public animal husbandry increased by 32 percent and in 1980 amounted to more than 2.1 million tons, compared to 1.6 million tons in 1971 (see Table -- in thousands of tons).

Indicators	Years				
	1971	1973	1975	1977	1980
Animal husbandry on the whole	1600	1744	1955	2052	2118
Including:					
Cattle husbandry	370	523	693	740	699
Hog raising	944	921	931	893	979
Sheep raising	19	23	19	22	25
Poultry raising	220	230	260	367	392

It is apparent that approximately 80 percent of all concentrated feed is expended to satisfy cattle husbandry and hog raising requirements.

Over the course of a decade (1971-1980), the principal increase in concentrated feed expenditures occurred in the case of large-horned cattle. Thus, whereas in public animal husbandry on the whole the expenditures of concentrates increased by 519,000 tons, in cattle husbandry -- by 329,000 tons



(by 88.9 percent), in poultry raising -- by 172,000 tons (78.2 percent), in hog raising -- by 35,000 tons (3.7 percent) and in sheep raising -- by only 5,000 tons (31.6 percent).

Beyond any doubt, by the end of the decade a certain portion of the concentrates had increased as a result of an increase in the number of animals and also as a result of the intensification in animal husbandry. However, whereas this was the chief reason in poultry and sheep raising, in cattle husbandry the increase in expenditures from 370,000 to 699,000 tons was the result of the use within the branch of a physiologically unsound type of animal feeding.

The insufficient production of coarse and succulent feeds and even more important -- their low quality -- led to a situation wherein many farms followed an incorrect path in management of the branch; they covered their "lapses" in the procurement of high quality bulky feed by a raised expenditure of concentrates, thus eliminating the shortage of energy in the rations for large-horned cattle. Thus, compared to 1971 when each cow in the republic was fed 4.4 tons of silage, in 1980 -- only 3.3 tons.

In the process, the quality of the silage changed substantially. In recent years the principal bulk of the silage has been procured from the leaves and stalks of corn harvested for grain. The consumption of concentrates per liter of milk during this period increased from 323 to 411 grams and in the structure for cows rations they have occupied up to 31 percent in recent years, compared to 22 percent in 1971.

Tests carried out over a period of 2 years at MoldNIIZhiv /Moldavian Scientific Research Institute of Animal Husbandry and Veterinary Science/ established the fact that when there is a sufficient quantity of silage and haylage, even for obtaining 4,000 kilograms of milk from each cow annually, it is sufficient for the ration to contain 28 percent concentrated feed and for a milk yield of 3,000 kilograms the proportion of such feed must be considerably lower. Moreover, a raised level of concentrates in a ration leads to an undesirable change in metabolism and to a deterioration in the reproductive functions and overall state of health of the brood stock

Optimization of the structure of the rations is deserving of a great amount of attention even in hog raising.

Whereas not too long ago the rations for hogs contained a high proportion of succulent and green feed, with special green production lines being created for them and with beets and silage being procured in large quantities, in recent years a clear trend has appeared towards increasing the proportion of concentrates by reducing the green, coarse and succulent feeds.

An analysis of the structure of rations at sovkhoses throughout the republic reveals that stable growth is taking place in the use of concentrated feeds in hog raising: during the 8th Five-Year Plan it was allocated 83 percent, during the Ninth -- 90 percent and during the 10th Five-Year Plan -- 91 percent, including mixed feeds -- 23, 40 and 48 percent respectively. The proportion of green and succulent feeds decreased during this period from 12 to 6 percent. An even greater increase in the proportion of concentrated feeds in rations -- up to 92 percent -- is being observed in the kolkhoz-cooperative sector.

An increase in the proportion of concentrates through a reduction in green, succulent and coarse feeds is unsound both from a physiological and economic standpoint.

The farms must solve the problem of supplying the hog raising complexes with green and succulent feeds in conformity with the physiologically sound nutritional norms for the animals. Studies carried out at the Progress NPO /Scientific Production Association/ established the fact that alfalfa fodder is an extremely fine additive for biologically rich protein in the rations for pregnant sows and hogs during fattening. Its use instead of a portion of the concentrated feed (15-25 percent of the nutritional value of a ration) has a positive effect on reproduction, on the growth and development of test animals and also on reducing the cost of this output.

In the fattening of hogs, fine results can also be obtained from the extensive use of mixed silage, prepared from plants rich in carbohydrates, vitamins and mineral substances. In our studies, the substitution of mixed silage for a portion of the concentrated feed (up to 20 percent of the nutritional value of a ration) made it possible to lower the mixed feed expenditures during fattening to 49 kilograms per head, with the same daily weight increase being obtained in both the control and test animals.

Thus the solution for the problem of achieving efficient use of feed and especially concentrates consists mainly of optimizing the feed rations and obtaining a correct ratio of concentrated and other feeds.

However, priority importance is attached to the problem of raising the efficiency of use of the concentrate portion of the ration. Analysis has shown that cereal grain crops such as corn, wheat and barley and the products obtained from their processing, all rich in energy but extremely low in protein, predominate at the present time in the structure of the concentrate portion of rations. At the same time, pulse crops (peas, soybeans) are being utilized in extremely limited quantities.

For example, during the 1977-1978 period, of the overall expenditure of 2-2.2 million tons of concentrates in animal husbandry, pulse crops accounted for only 20,400-22,000 tons, or approximately 1 percent.

Pulse crops are required in particular for hogs and poultry, which present raised requirements not only with regard to the overall quantity of protein but also in connection with its quality, that is, the amino acid structure. Thus for the efficient management of these branches, the proportion of pulse crop concentrates must be raised considerably. Meanwhile, the production of pulse crops has even decreased. For example, during the 1966-1970 period it amounted to 90,000 tons, in 1971-1975 -- 98,000 and in 1976-1980 -- only 51,000 tons.

The most efficient use of concentrated feed is achieved when it is fed in the form of full-value mixed feeds, which promote on a considerably more extensive scale an increase in the productivity of animals on the order of from 20 to 25 percent. Actually, the rations which are typical for Moldavia lack, in terms of their content, a number of nutritional and biologically active substances

and particularly protein, phosphorus, cobalt, iodine, manganese, zinc and vitamins A, D and E. Full value mixed feed which has been enriched by these nutritional elements supplement the typical rations, thus raising the efficiency of use of the concentrates and rations on the whole. Thus the role played by mixed feed in further intensifying animal husbandry is extremely great.

During a republic meeting of leading animal husbandry workers in January 1983, emphasis was placed upon the fact that all concentrated feed must be processed into full-value mixed feed.

Over the past decade, definite progress has been achieved in the production of mixed feed, the role of which in raising the efficiency of animal husbandry is difficult to exaggerate.

The capabilities of the state mixed feed enterprises have increased considerably, a far-flung network of interfarm mixed feed plants has been created, the quality of the mixed feed has improved sharply and the production of special mixed feed for animal husbandry complexes has been organized.

Thus, compared to 1971 when the proportion of mixed feed in the overall expenditures of concentrates for public animal husbandry amounted to 52 percent, during the 1978-1980 period it was raised to 66 percent.

However the mixed feed requirements of animal husbandry are by no means being satisfied completely and a considerable portion of the concentrated feed is being fed to the animals in an unbalanced form and this is lowering the KPD /efficiency factor/ of the feed.

Thus, during the 1978-1980 period, of the overall quantity of concentrates used for hogs, mixed feed constituted only 71-72 percent. In poultry raising, this indicator fluctuated from 75 to 84 percent and in the concentrate structure for KRS /large-horned cattle/ mixed feed constituted only 47-50 percent. In 1980, of 700,000 tons of concentrates fed to KRS, 276,000 tons were used in the form of grain, meal and groats. If one takes into account the fact that the efficiency of their use decreased by 25 percent, then it is noted that this amounts to roughly 80,000 tons of feed units and for animal husbandry on the whole -- 160,000 tons of feed units, an amount equivalent to the production of 130,000 tons of milk or 16,000 tons of meat.

Insufficient use is being made of the capabilities of the interfarm mixed feed industry, which at the present time, owing to a shortage of high protein components, is producing mainly simple feed mixtures.

In order to raise the efficiency of its work on the farms, greater amounts of local high protein feed -- soybeans, peas, high quality alfalfa grass meal -- should be produced; more beet tops, grape pomace and other waste products obtained from the processing of agricultural crops should be processed for the production of mixed feed.

However the leaders of farms are not devoting a great amount of attention to increasing the production of local high protein feed, since the interfarm mixed

feed enterprises determine the mixed feed volume, based mainly upon the deliveries to them of protein-vitamin additives by the state mixed feed industry. At the same time, the latter possesses only limited potential for producing BVD /protein-vitamin additives/ owing to a shortage of high protein raw materials.

Over the past few years, the production of BVD based upon the use of carbamide concentrate, which contains up to 20 percent urea, was mastered at the Tiraspol Grain Products Combine.

On some farms the importance of this additive as a protein substitute in the rations for ruminant animals has clearly been underestimated. Individual instances involving an absence of effect when it is furnished to animals are associated with incorrect use of the BVD -- interruptions in feeding and also considerable shortages of readily hydrolyzed carbohydrates and some mineral substances in the rations.

By 1985 the protein requirements for large-horned cattle (less cows) and sheep will increase to 160,000 tons, of which amount approximately 30,000 tons can be made up by means of synthetic sources of nitrogen fed in the form of BVD. This will make it possible to include in the feed balance almost three times more urea compared to the present period and to make high protein feed of animal origin, particularly oil-seed meal, available for other types of animals.

A portion of the protein for cows can also be obtained through the use of urea. However the BVD for cows should ideally be produced in accordance with a recipe developed and approved by MoldNIIZhiv (1978).

The structure of the BVD for cows (in percent) is as follows: carbamide concentrate -- 45, sunflower oil-seed meal -- 36, monocalcium-phosphate -- 8, salt -- 5 and MoldNIIZhiv premix -- 6. One kilograms of the additive contains 400 grams of digestible protein, 13.5 grams of calcium and 23 grams of phosphorus.

In our experiments of feeding an additive against a background of standard rations, the cow productivity amounted to 17 kilograms of milk daily per head, with an expenditure of 0.8 feed units per kilogram of milk.

The high protein raw materials of plant origin available in the republic must also be utilized in a more efficient manner. The mixed feed for large-horned cattle must be differentiated by seasons. For example, in May, June and July the cows are provided with more green alfalfa, which contains up to 180 grams of digestible protein (norm of 100-105 grams) per feed unit. Beyond any doubt, during this period it is advisable to produce mixed feed having a low protein content, feed which does not include high protein components, particularly oil-seed meal and pulse crops. We developed such a recipe for mixed feed as early as 1978: it contains (in percent) corn material -- 40, wheat material -- 30, wheat bran -- 20, molasses -- 5, salt -- 2, monocalcium-phosphate -- 2 and premix -- 1.

Compared to the standard feed, approval for this mixed feed is making it possible during the period of leguminous grass usage to realize a savings of 54 kilograms of sunflower oil-seed meal, without lowering the productivity of the animals. There is an extreme need for mixed feed having this structure,



for delivery to cows during the period when they are being fed leguminous grass fodder.

An important problem at the present time in the production of mixed feed is that of achieving an economy in the use of grain by using other components which are not food products. From this standpoint, practical interest is being displayed in grape and apple pomace, dry pulp residue, corn gluten, brewing waste and other secondary products of processing enterprises.

The workers attached to scientific institutes and educational institutes throughout the republic have studied rather completely the effectiveness of a majority of these products and they have developed recommendations for their use and recipes for the mixed feeds.

This problem is the subject of many discussions and as yet no practical solution has been found.

Thus, for example, even during the 1960's, studies carried out at KSKhI and MoldNIIZhiv established the effectiveness of use of grape pomace and dry beet pulp residue in the structure of mixed feeds. However, up until now the production of dry pulp residue and dried out grape pomace has been organized in extremely insufficient quantities. For the preparation of mixed feeds, special importance is attached to making maximum use of secondary products which are distinguished by a high protein content -- the waste products of meat combines and slaughtering points, creameries, corn gluten, brewing waste and some others.

For example, the dry substance of corn gluten, in terms of its crude protein (60 percent) content, even surpasses such high protein feeds as soybeans, peas and oil-seed meal.

The use of dry corn gluten in a mixed feed structure as the only high protein feed ensures high growth energy for young stock and a good return from the feed. Thus 6-month old heifers which for a period of 150 days were fed the principal mixed feed ration in which all of the oil-seed meal had been replaced by dry gluten, furnished a weight increase of 800 grams daily (control variant with oil-seed meal -- 761 grams), with an expenditure per kilogram of weight increase of 6.4 feed units.

In view of the fact that at the present time all enterprises engaged in the production and processing of agricultural raw materials constitute a single agroindustrial complex, real conditions have been created for solving in a more efficient manner those problems concerned with including the numerous waste products of production in the feed balance of animal husbandry and expanding the raw material base of the mixed feed industry.

Nutrient yeasts are a valuable high protein raw material for the mixed feed industry. However their production is extremely limited. Quite often the principal reason for this lies in the absence of raw materials. Meanwhile, large quantities of raw materials available in the republic are not being used but rather are being destroyed. For example, each year up to 300,000 tons of grape vines and foliage accumulate on the farms, sufficient for producing up to 40,000-50,000 tons of yeast. Nor is use being made (or at best, only poor use)

in the hydrolysis industry of the waste products obtained from the pruning of fruit trees, sunflower stalks and heads, reeds and other raw materials.

The problem of efficient use of concentrated feeds, and it follows all feed resources on the whole, is dependent to a considerable degree upon the quality of the mixed feeds being produced and their assortment.

At the present time, standard additives (premixes) which do not take into account regional peculiarities are being used for enriching mixed feeds with mineral substances. Meanwhile the standard rations for animals in the republic and the chemical structure of local feeds differ substantially from the feed structure for other zones throughout the country.

For example, premix P-51-7, which is presently in production, does not provide growing hogs with certain vitamins and microelements: it lacks the microelement manganese and it does not contain sufficient copper, zinc or cobalt. Studies aimed at improving mineral nourishment for suckling pigs and young stock during the maturing period at the Floreshty Hog Factory underscored the advisability of enriching the mixed feeds with the salts of six microelements. During a series of experiments, they raised the daily weight increase in the young pigs by 8.8-10.9 percent.

In this regard, a need has arisen for utilizing enrichment additives in the mixed feed structure which take into account local conditions and especially the chemical structure of the local feeds. In the case of long-horned cattle, for example, the recipes for such additives have already been developed and approved. However the legal system for examining and approving these recipes is extremely complicated and requires definite improvements.

Quite often the mixed feed that is produced (especially for hogs and poultry) deviates considerably from the standards in terms of the content of principal nutrients. Thus, in the mixed feed for turkey chicks produced by the Kishinev Grain Products Combine (analyzed 25 September 1982), there was only 21.21 percent protein content instead of 28.35 percent as called for in the quality certification.

The mixed feed delivered to the Vadul-Luy-Vode GPF from the Floreshty Grain Products Combine contained 13.76 percent protein instead of the 17.7 percent called for in the quality certification. All of this leads to a situation wherein the animal husbandry enterprises are forced to "finish off" the mixed feed at the site, an action which is not included in the accepted technology.

Industrial animal husbandry is not satisfied with the assortment of mixed feeds being produced. Extremely few starter mixed feeds, which are distinguished by a high degree of full value, are being produced. These mixed feeds determine to a large degree the subsequent productivity of all types of animals and poultry. At the present time, starter mixed feed is being supplied actually to only two complexes engaged in the production of beef.

At the same time, a lack of this mixed feed at a majority of the animal husbandry enterprises is resulting in a lag in the growth of the young stock and in considerable overexpenditures of dairy feeds. For example, over the

past 3 years in Dondyushanskiy Rayon the expenditure of whole milk for the raising of one calf amounted to 290-320 kilograms. In addition, calves which were supplied to the complex, owing to a lack of starter mixed feed, were fed up to 20 kilograms of ZMTs /whole milk substitute/ and this resulted in an overall expenditure of dairy feed for the raising of a calf to 500 kilograms per head. Similar situations prevail in other regions of the republic.

Meanwhile, the overall requirement for such mixed feeds for large-horned cattle throughout the republic is only 90,000 tons. Complexes for the production of pork are being supplied with starter mixed feeds in just as poor a manner.

In addition, the starter mixed feeds for young pigs are being consumed in a poor manner. Thus aromatic and flavoring additives should be included in their recipes, such as sodium glutamate, saccharin with calcium carbonate, dry whey and corn molasses. For the purpose of rapidly adapting the young pigs to the dry feed, the starter feed should be coated and flavor additives included in the coating.

In order to raise the efficiency of use of concentrated feeds, use should be made of a purely zootechnical method such as the setting of norms, with productivity being taken into account. Unfortunately, this is not being done on many farms. During the initial period of lactation, a cow should be given more mixed feed for each kilogram of milk and as the lactation period abates the expenditure of such feed should be decreased. Thus, for a milk yield of 4,000 kilograms of milk, the following concentrate amounts are adequate for each kilogram of milk: during the first 100 days of lactation -- 300-350 grams of concentrates, during the next 100 days -- 200-250 and at the end of lactation -- only 150 grams.

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## LIVESTOCK FEED PROCUREMENT

### SEARCH FOR ADDITIONAL HIGH-PROTEIN FEED RESOURCES IN BELORUSSIA

Minsk SEL'SKOYE KHOZYAYSTVO BELORUSSII in Russian No 4, Apr 83 p 9

[Article by V. K. Chernikov, director of the Division of the Food Industry of BSSR Gosplan: "Protein Reserves"]

[Text] One of the central problems in feed production for livestock raising is providing feed that is balanced in proteins. In solving this problem a large role must be played by ministries and departments that are involved in servicing agriculture and in the processing and sale of its products. This refers firstly to the BSSR Ministry of Procurement.

In recent years the production of mixed fodder for the young of large-horned cattle and sows has reached only 25 percent of demand. At the same time existing possibilities for additional resources in protein raw materials are not utilized sufficiently. For example, in 1981 the plan for the procurement of vitaminous grass meal was underfulfilled by over 46,000 tons. Over 63 percent of what was procured was fifth class. If the full volume had been procured and if the meal had been rated first class in quality then the mixed fodder industry would have additionally produced 90,000 tons of full-value and protein-balanced mixed fodder. The situation did not change in 1982, when there was an underproduction of 31,500 tons of grass meal and when its quality remained at 1981 levels.

The system of the BSSR Agricultural Ministry is utilizing the possibilities for the production of meat-bone meal extremely poorly. Until 1983 only one salvage plant was in operation in the city of Bereza. It was only in late 1982 that the salvage plants of Belynicheskiy, Buda-Koshelevskiy and Ushachskiy rayons, with a total capacity of 7.5 tons of finished product per shift, were put into operation. The assimilation of the production capacities of these plants together with the enterprise in the city of Bereza will provide us with the possibility of producing no fewer than 1,500 tons of meat-bone meal this year. This will mean a weighty contribution to the store of protein raw materials and for this reason there should be an acceleration of the building of salvage plants in Lidskiy and Logoyiski rayons. At the same time large livestock raising farms should be equipped with machinery for salvaging carcasses after slaughter as well as other wastes. The accelerated building and introduction into operation of the aforementioned plants would enable us to produce over 3,000 tons of meat-bone meal annually.

Above-plan production of protein raw materials by the enterprises of the microbiological industry in the republic should become an important source for obtaining additional resources. At the present time the existing system for distributing feed protein produced in excess of the quota is very complex in these enterprises and does not encourage the interest of local organs in creating the conditions for the overfulfillment of plans for the production of these and other microbiological products. Thus, in 1982 the enterprises of the republic's microbiological industry produced 4,350 tons of feed protein in excess of the quota. At the present time union organs are dealing with the question of producing no less than 50 percent of above-plan feed protein locally.

This year the collectives of the Novopolotsk Plant for Protein-Vitaminous Concentrates and the Bobruysk and Rechitsk hydrolysis-yeast plants have taken on socialist obligations to produce 2,800 tons of feed protein in excess of the quota. This will enable the enterprises of the BSSR Procurement Ministry to balance the protein content of an additional 10,000 tons of mixed fodder for the young of large-horned cattle and sows.

The enterprises of the BSSR Ministry of the Meat and Dairy Industry will have the opportunity in 1983 of increasing the production of meat-bone meal by up to 6 percent per ton of meat and subproducts in category one, which would bring in an additional 2,000 tons if the plan for the procurement of livestock for industrial processing were met. In addition, at the Mogilevsk Gelatin Plant it is possible to produce about 200 tons of bone semi-finished products for feed purposes.

The Vitebsk Oil Extracting Plant is an enterprise that fulfills its plan objectives regularly. This year it can make its contribution to increase protein resources by supplying mixed-fodder enterprises with no fewer than 1,000 tons of oil-seed meal above the plan.

An important reserve of raw materials for the mixed-fodder industry is whey. In the republic's dairy industry it is utilized in the production of lactose and ZTsM [whole milk substitute] and it is supplied to bread-baking enterprises. A significant amount is returned to kolkhozes and sovkhoses for feeding to livestock. It would be expedient to dry a part of the whey because 1 kilogram of dry whey contains 1.37 feed units, 119 grams of digestible protein, minerals and all the irreplaceable amino acids. Measures should be implemented to increase the output of bioZTsM and the drying of whey. There has been some experience in this--in 1982 320 tons of bioZTsM and 103 tons of whey were produced.

The wine plants of the BSSR Ministry of the Fruit and Vegetable Industries and Ministry of the Food Industry produce large quantities of apple spew each year, which they utilize inefficiently. During the current five-year plan a portion of the spew will be utilized for the production of fruit powder and for drying for feed purposes. The utilization of dried fruit spew will enable us to improve the sugar-protein ratio in mixed fodder. It would be expedient for the BSSR Ministry of the Fruit and Vegetable Industries to continue its work to install electronic computers in

departmental enterprises in order to supply mixed fodder plants with 300 tons of dry apple spews this year.

It is essential to deal with the question of the most efficient utilization of skimmed milk. At the present time its return to kolkhozes and sovkhozes according to existing standards exceeds their needs for feeding calves and piglets. By the end of the five-year plan this excess will comprise over 400,000 tons annually. Moreover, the time at which the skimmed milk is produced does not correspond to the time it is needed for feeding. During the first and fourth quarters 50 percent of the annual total of skim milk is needed for feeding, but its output from production is only 28 percent. The experience of the developed countries of the world shows that the most efficient way to utilize the resources of skim milk, especially during the second and third quarters, is to transform it into dry form. For this purpose a shop for the production of regenerative milk is being built in Orshanskiy Rayon. This shop will need about 16,000 tons of dry defatted milk annually. This brings rise to the necessity of immediately changing existing norms for returning skim milk.

The search for additional sources of protein raw materials will provide considerable help in solving the questions of feed production and of the continued development of livestock raising and will encourage the successful implementation of the Foodstuffs Program.

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## LIVESTOCK FEED PROCUREMENT

### CULTIVATION OF HIGH-YIELD LIVESTOCK GREEN FEED

Moscow SEL'SKAYA ZHIZN' in Russian 30 Apr 83 p 2

/Article by D. Altunin, deputy director of the All-Union Scientific Research Institute of Livestock Feed and Doctor of Agricultural Sciences: "Science and Production: The Green Conveyor"<sup>7</sup>

/Text/ The uninterrupted supply of green feed for cattle, as demonstrated by advanced practice, reduces the use of concentrates by 1.5 to 2-fold.

Green feed has one major shortcoming - their per-sown area yield and their full value depend heavily upon the phase of vegetation of plants. In certain periods grass is burned out and becomes coarse and the yield is reduced sharply. So that this does not affect the productivity of the farms and there are no summer "windows of hunger" for cattle and its productivity remains constantly high from spring until late fall, in the southern regions of the Soviet Union right up to the wintering season, at leading farms they organize a green feed conveyor - the growing of crops which are planted and cultivated in a way that permits their being available as feed during the necessary livestock periods.

The green conveyor is also needed while cattle are being pastured so that the animals can be fed when there is not enough feed under foot. It is also needed during the time when cattle are kept in stalls. Green feed is supplied to the farm in this instance from both natural fields and from plowed lands. This method of summer maintenance reduces the use of concentrates by 1.5 to 2-fold; in daily milkings of not more than 12 to 15 kilograms it is possible to get by without grain fodder altogether. This is demonstrated by research performed by the All-Union Scientific Research Institute of Livestock Feed.

The primary condition for green feed to be contained in a single feed unit of not less than 120 grams of protein and that within a 24 hour period each cow receive from 60 to 70 kilograms of such feed. For this reason the green conveyor must include the more high-yield feed crops. The earliest green feed in many regions of the Soviet Union can be obtained from the sowings of winter

rape, rape, winter rye, and tritikale. Then come the grasses from the pastures and the hay making, the perennial and annual grasses, corn, Cruciferae (spring rape, oil-bearing radish, and others). In the fall they harvest the secondary and third cuttings of the perennial and annual and stubble sowings of grass, feed cabbage, melons, and still later the secondary plantings of Cruciferae crops, annual grasses mixed with sunflowers.

In dry regions of the Soviet Union a stable source of green feed must be the irrigated land. When farming with irrigation to grow the more productive feed crops leading kolkhozes and sovkhoses in Stavropol Kray, Volgograd, Rostov and several other oblasts each year receive from 18 to 20,000 and more feed units per hectare. For example, at the farm of the All-Russian Scientific Research Institute of Irrigation Farming the highest productivity of feed crops was obtained from the cultivation of winter rye, following the harvest of which they planted corn in a dense manner, followed by sunflowers and legumes mixed together. The total output of green feed of all crops exceeded 1,240 centners per hectare, which equalled 26,600 feed units.

In the Kirghiz SSR at the "Kommunizm" kolkhoz in Suzakskiy Rayon the highest yield of green feed came from the planting of corn mixed with a multi-yield grades of sorghum. From each hectare of sown land in the first mowing they received 600 centners of green feed; then they performed two more mowings of the sorghum and obtained another 500 centners. Altogether this produced 1,100 centners of green feed, representing 20,000 to 21,000 feed units per hectare.

In the Non-Chernozem region winter rye (or rape) performs well as part of the green conveyor in the fields; following the harvesting of these crops corn and a mixture of legumes, oats and sunflowers can be grown there. In the lighter soils an alkaloid-free feed lupus can be cultivated. Following the harvest of the early grain crops a mixture of annual grasses, white mustard, oil-bearing radish and spring rape can be grown as an intermediate feed crop. These feed crops when properly fertilized will last until the arrival of fall frosts and provide from 150 to 180 and up to 250 to 300 centners of high-nourishment green feed on a hectare of land.

Recently at some kolkhozes and sovkhoses in Latvia and Estonia they have begun to cultivate such promising high-yield feed crops as perko, feed cabbage, Weirich's buckwheat, comfrey, and eastern goat's rue.

At the sovkhos imeni Kuybyshev in Istrinskiy Rayon of Moscow Oblast over a period of several years winter rye, orchard grass, awnless brome grass, timothy-clover mixtures, vetch-oats, legume-oats-sunflower mixtures, legume-rye grass mixtures of varying

time periods for sowing, and feed root crops are becoming a part of the green conveyor. The perennial grasses at this sovkhos are mowed three times; in the fall the tops of the feed root crops are used as cattle feed. The continuous supply of green feed has made it possible throughout the year-long stalling of cattle to obtain from each cow on the average for the five-year plan nearly 4,000 kilograms of milk.

In Western Siberia, in addition to the perennial grasses and crop cuttings and pastures, it is expedient to introduce corn and annual grasses (feed millet, legume-oat mixtures and sunflowers) and spring rape in the early plantings. In Eastern Siberia rape enjoys several advantages over annual grasses. In this region spring and winter rape are planned for silage from the 15th through the 25th of June and for green feed from the 1st to the 10th of July. These time periods simplify the pre-planting struggle with weeds and make it possible to efficiently use atmospheric precipitation during the second half of the summer. As a result a hectare of sown land can yield 400 to 450 centners of green feed. The sowings of rape can withstand early fall frosts, which means that it is possible to extend the pasturing of cattle by more than a month or to feed them with green feed in the stall.

One can increase the protein content in feed by planting more legumes such as alfalfa, clover, sainfoin and sweet clover and from the annual crops - soy, peas, vetch, lupus and serradella. In the Non-Chernozem region and Siberia (and also as intermediate sowings in the southern regions of the Soviet Union) it is useful to substitute late-ripening grades of corn with the early and middle ripening grades. This substitution of 25 to 30 percent and more increases the output of feed. The nourishment of a kilogram of feed is increased from .16 - .18 to .22 - .25 of a feed unit. Thus, for example, in the Altay Kray at the kolkhoz imeni Chapayev a fast-ripening hybrid of corn called "kollektivnyy-220" has provided cobs of a yellow ripeness.

In Stavropol and Krasnodar krays and in the south of the Ukraine the protein content in corn plantings can be increased by 25 to 30 percent by thickening its plantings with soy beans.

Early green feed is obtained from natural and planted meadows. To accomplish this they select lands that have good, rapidly growing stands of grass. In wooded regions early feed comes from orchard grass, meadow foxtail, canary grass and meadow grass. In the steppe and wooded-steppe regions they use awnless brome grass and wheat grass for this purpose; in the dry steppe and semiarid regions they use thin-stemmed fescue and feather grass and brome grass herbages. To speed up the maturation of herbaceous grasses and to obtain an early green feed on crop pastures a spring application of fertilizer is used at a dosage of 45 to 60 kilograms of nitrogen per hectare; in hay fields the application norm should be increased to 60 to 90 kilograms. Moreover the herbaceous



grasses are fertilized first in the higher sections of the land and on the southern slopes where their vegetation arrives earlier. Winter crops are also fertilized, including rape, rye, tritikale, which are planted for livestock feed, at a dosage of not less than 45 to 69 kilograms per hectare. When they are not available, it is also necessary to apply organic animal wastes, manure and composts.

Recently Soviet scientists have introduced many new highly productive varieties of feed crops. These include the "northern hybrid", "Omsk-8893" and "Marusinskaya-81" alfalfas; the winter ryes known as "zarechenskaya green crop", "feed-1", "morning"; the oats known as "Urals", "Omsk feed-1", "crop-550"; tritikal known as "awnless", "hell-2578". Their use can significantly increase the harvesting of green feed. However, the expanding of the planting of these varieties will slow down the inadequately established seed farming. There is no plan to multiply the tritikale.

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ROLE OF SCIENTIFIC PRODUCTION ORGANIZATION IN MOLDAVIA SET FORTH

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[Article by M. F. Lupashku: "The Role of the Moldavian NPO in the Effectiveness of Scientific Research in the Republic"]

[Text] In the complex of measures for further developing agricultural production and increasing its efficiency, an important role is played by acceleration of scientific and technical progress, and practical utilization of the achievements of science and advanced practice for successful development of the agro-industrial complex in keeping with the decisions of the 26th CPSU Congress and the May (1982) Plenum of the CPSU Central Committee.

The CPSU Central Committee regards acceleration of scientific and technical progress as one of the key problems of the economy in the stage of developed socialism in our country. While the development of the society, production of material goods and increasing satisfaction of the needs of the people are based on scientific and technical progress, as L. I. Brezhnev emphasized in the accountability report to the 26th Party Congress, "The underlying basis of scientific and technical progress is the development of science."

In connection with this, further intensification of agricultural production is arranged on the basis of rapid development of scientific and technical progress and acceleration of the introduction of the achievements of science into production. In Moldavia, on the basis of branch scientific research institutes, specialized sovkhoses and other enterprises, scientific production associations (NPO) have been created for the main branches of the republic's agro-industrial food complex.

The experience in the operation of NPO's that has been accumulated in Moldavia (1974-1981) proves that the combination of scientific and production organizations in the main branches of agricultural production and the direct creative cooperation of scientists, specialists and workers within the framework of scientific production formations have transformed scientific research, the testing of its results under production conditions and the introduction of the achievements of science and advanced practice into units of a single, well functioning system of "research--production." Moreover, the results of science under the conditions of the NPO have almost doubled as compared to the period before they were created.

World and domestic science and practice have established that the introduction into agricultural production of new, more productive strains and hybrids provide for obtaining up to a 50-percent increase in the yield. Therefore a great deal of attention is devoted to selection work in the republic. The especially great effectiveness of work for the selection of corn, field, vegetable and fruit crops and grapes, and also the development of seed growing, nursery plant growing and breeding work has been manifested since the creation of the NPO. Advanced methods and devices and modern instruments and equipment are used in the selection process. Working together on the development of selection problems are selection workers, geneticists, physiologists, technologists, engineers, economists and other specialists of scientific institutions of the Moldavian SSR Academy of Sciences, the Kishinyev Agricultural Institute imeni M. V. Frunze, the Kishinyev State University imeni V. I. Lenin and the All-Union Scientific Research Institute of Biological Methods of Plant Protection. Within the framework of scientific and technical cooperation, joint research on selection is being conducted with the leading scientific research centers both of our country and of foreign countries.

Moldavian selection workers are faced with the task of creating special model strains and hybrids that meet the following basic requirements: correspondence to the time periods for ripening under the agro-climatic conditions of the zones of cultivation; a high and stable yield throughout the year; the ability to efficiently utilize the elements of mineral nutrition, soil moisture and energy of physiologically active radiation (FAR); resistance to lodging, drought, pests and diseases; high quality of products (content of sugar, amino acid composition, and so forth); high adaptation to technology and the ability to meet the requirements of cultivation according to industrial technology; convenient and economically advantageous seed growing, and so forth.

The effectiveness of research for selecting agricultural crops and breeds of animals is shown by the work experience of individual associations. Thus during the years of operation of the Selektiya NPO (1974-1981) 15 new strains and hybrids of field crops have been regionalized. The results of the work of selection workers have increased significantly in the past 5 years, during which 13 new strains have been regionalized, or about 50 percent of the number submitted for state testing. These include Dnestrovskaya 25 and Pitikul winter wheat strains of the intensive type, Yarna winter barley, Bel'tskaya 25, Lumina, Bukuriya and Aurika soybeans, Avangard and Ogonek peas, Moldavanka and Flora vetch, Porumbitsa beans, and Moldavskaya odnosemyannaya 41 sugar beets.

At the present time 18 regionalized strains created by the Selektiya NPO are being cultivated on the fields of the republic. Eight of these strains have been regionalized outside of Moldavia and are being cultivated in the Ukrainian SSR, the republics of Central Asia, Stavropol Kray and other regions of the country.

During the years of the 10th Five-Year Plan the Dnestrovskaya 25 strain of winter wheat which was regionalized in 1977, according to data of the Moldavian SSR Central Statistical Administration, on an area of 161,500 hectares surpassed the productivity of the Odesskaya 51 strain by 2.1-5.1 quintals per hectare. This strain manifests significant advantages in productivity during wet years and on nonirrigated agricultural backgrounds where the Odesskaya 51 lodges severely.

Research has been developed for creating intensive strains of winter wheat of the steppe ecotype, which are distinguished by increased productivity of wheat of the steppe ecotype, productive bushiness (750-800 spikes per one square meter), well filled out spikes, and stalks which are shorter and more resistant to lodging. One should take note of the new short-stalked strain Pitikul which has great potential productivity (85-90 quintals per hectare). It has been regionalized in the Moldavian SSR with irrigation and on a nonirrigated agricultural background of low terraces. Under production conditions (Kolkhoz imeni Sverdlov in Slobodzeyskiy Rayon) with irrigation and fertilizer, in 1979 and 1980 the productivity of this strain was 85-92 quintals per hectare. On an average for the elite farms of the Selektziya NPO, from an area of 289 hectares without irrigation, 50.0 quintals per hectare of the Pitikul strain were obtained, which is 6.0 quintals per hectare more than from the Odesskaya 51 strain. Another intensive strain model of winter wheat, Budzhak, has been accepted for state strain testing. Its productivity in competitive strain testing on clean fallow exceeded the standard by 7.0 quintals per hectare, with a potential productivity of 85 quintals per hectare.

The Yarna strain of winter barley has been regionalized in the Moldavian SSR and the Ukraine (in Odessa, Ivano-Frankovsk, Kirovograd and Cherkassy oblasts). Its productivity in competitive strain testing was 75-80 quintals per hectare and more, exceeding the strains that had been regionalized in the republic, Start and Odesskiy 46, by 7-12 quintals per hectare. The high productivity of the Yarna strain is provided as a result of increased productive bushiness, resistance to lodging, better filling out of the spike, the large size of the grain kernel, increased resistance to fungal diseases, and also the relatively high winter hardiness. In 1977 in experiments its potential productivity was 89 quintals per hectare with a good condition of the stalk stand.

During 1975-1981 scientists of the Selektziya NPO submitted for state strain testing 5 strain models of spring barley with a potential productivity of 70-75 quintals per hectare and more. As a result of three years of study the Primevara model was recognized as promising in Moldavia, in Tambov, Vologda and Kemerovo oblasts, and the Viola strain--in the Mary ASSR and Astrakhan Oblast. Both models have a fairly broad ecological resilience and increased responsiveness to increased doses of fertilizers.

Pulse crops occupy a leading place in solving the problem of vegetable protein. A good deal of attention is also devoted to the selection of this type of crops. As a result of many years of work, the Selektziya NPO created a strain of peas, Ogonek, which has already been regionalized in the Moldavian SSR. It is characterized by great potential productivity. Thus at the Shilute state strain testing station in the Lithuanian SSR in 1978 they obtained 68.6 quintals per hectare of grain of this strain. In recent years the Selektziya NPO has established its productivity in competitive strain testing at an average of 43.4 quintals per hectare, while the productivity of the Ramonskiy 77 strain is 36.6 quintals per hectare.

The new strain model of grain peas, Bel'tskiy zelenozernyy, which is undergoing state strain testing, is low growing, more resistant to lodging, and more suitable for mechanized harvesting than the standard, Ramonskiy 77, and its productivity averages 41.7 quintals per hectare, which is 8.1 quintals per hectare more than the standard.

The Avangard strain of winter peas which has been regionalized in the republic since 1977 surpasses the previously regionalized Kormovoy 226 in productivity of green mass by 15-20 quintals per hectare and seeds--by 4-8 quintals per hectare. It is more resistant to lodging and the protein content in the green mass is 1.5-2 percent greater.

The new strain model of feed peas, Bel'tskiy yantarnyy, which has been submitted for state strain testing, surpasses the Avangard strain in productivity of green mass by 3.4 quintals per hectare and seeds--by 2.2 quintals per hectare. The maximum productivity of green mass of the new model when mixed with oats is 525 quintals per hectare, which was obtained in 1980 at the Dondyushanskaya State Strain Testing Station, and seeds--39.8 quintals per hectare, obtained in 1976 in competitive strain testing.

Under the 9th Five-Year Plan three strains of soybeans for grain were regionalized in the republic: Bel'tskaya 25, Bukuriya and Lumina, and for grain--Aurika.

Also of interest for production is the Porumbitsa strain of beans, which was created by selection workers of the Moldavian Scientific Research Institute of Field Crops. The strain is resistant to lodging and suitable for mechanized harvesting. According to data from competitive strain testing of the institute, with a productivity of 25.8 quintals per hectare it surpassed the standard, the Krasnogradskaya 5 strain, by 6.8 quintals per hectare, and the Moldavskaya belaya uluchshennaya strain--by 3.8 quintals per hectare. In recent years the Moldavanka strain of winter vetch has been regionalized in the republic, and the Flora strain of spring vetch in Moldavia and Stavropol Kray. Moldavian selection workers are faced with the task of creating new, highly productive strains and hybrids of sugar beets with a higher sugar content, and increased content of single-seed fruits and high germination. There are already certain achievements in carrying out this task. The Selektziya NPO has isolated and regionalized in our republic the single-seed diploid strain, Moldavskaya odnosemyannaya 41, which provides for a productivity of the roots of 440-490 quintals per hectare, sugar content--18.2-19.3 percent, and yield of sugar--80.4-90.6 quintals per hectare. Under production conditions (Kolkhoz imeni K. Marks in Yedinetskiy Rayon, the Kolkhoz imeni Michurin in Faleshtskiy Rayon, and the Association for Producing Feeds imeni Dzerzhinskiy in Rybnitskiy Rayon) this strain surpassed the previously regionalized strains in terms of productivity of roots--by 6-19 quintals per hectare, sugar content--from 0.1 to 0.3 percent (with a level of sugar content of 18.1-18.3 percent) and yield of sugar--from 1.0 to 4.3 quintals per hectare. The strain is distinguished by good uniformity, a high proportion of single-seed plants and high quality of the seeds (germination--86-90 percent, single-seed content--96-98 percent), which facilitates its cultivation with industrial technology. Seed growing of this strain is now being arranged in the Moldavian and Ukrainian SSR's.

In selection of sunflowers a task has been set to create hybrids that combine high productivity and oil content, and resistance to downy mildew, storage rot, grey mold, new races of broomrape and other unfavorable factors. The Soyuz 1 hybrid of sunflowers is already undergoing state strain testing. It was created jointly by scientists of the Selektziya NPO and the All-Union Institute of Crop Growing (VIR), and in competitive testing there are a number of hybrids obtained at the Selektziya NPO.

In Moldavia corn is the main grain forage crop. In the prewar period (1936) in Bessarabia more than 1 million hectares were planted in corn. On their individual farms, the peasants received extremely low yields (10.2 quintals per hectare). They cultivated mainly less productive siliceous strains and populations--Moldavanka zheltaya, Moldavanka oranzhevaya, Chinkvantino, Ganganka, Lapushnyak and others. After the Great Patriotic War, along with the establishment of the socialist system, in the Moldavian SSR there began a period of introduction into production of productive selection strains and hybrids of corn. The republic passed through the main stages of strain replacement of this crop relatively quickly. Local strains and populations, selection strains, inter-strains, strain-lines and interline hybrids. Beginning in 1956 most of the area was occupied by strain-line and double interline hybrid--VIR 42, VIR 45, VIR 156, Kishinevskiy 109, Kishinevskiy 150, Kishinevskiy 161, Kishinevskiy 167, Moldavskiy 102, and Krasnodarskiy 440. At the beginning of the 1970's a new stage began in the selection of corn in Moldavia--the period of the creation and introduction into production of simple and simple modified interline hybrids. With the creation of the Gibrid NPO and, in its system, the Moldavian Scientific Research Institute of Corn and Sorghum (Moldavian NIIKIS) new possibilities and prospects were opened up for intensification of scientific research work in selection, seed growing and technology of cultivating corn. A program was developed for obtaining hybrids, and the first step in its implementation was the creation of initial material with various genetic and economic-biological indicators.

Selection workers of the Moldavian NIIKIS have done a good deal of work to create original self-pollinating lines and exchange selection materials with leading scientific institutions of our country and foreign countries (Yugoslavia, Bulgaria, Poland, Hungary, the United States, Canada, France and others). In order to synthesize new, highly productive hybrids of corn, scientists of the Gibrid NPO are extensively using the method of hybridization of self-pollinating lines from their own selection with the best foreign lines. They observe the principle of mutual augmentation of the lines in terms of the most important economic and biological indicators. A large amount of work is being done to change seed growing of new hybrids over to a sterile basis, for which they use two types of sterility--Moldavian (M) and Brazilian (S).

As a result of 8 years of hard work, selection workers of the Gibrid NPO have now created and regionalized for Moldavia highly productive simple hybrids of corn Moldavskiy 385 MV, Moldavskiy 420 MV, Moldavskiy 423 vysokolizinovyy, the siliceous hybrid Moldavskiy 349, the medium early ripening hybrid Pioneer 3978 created in conjunction with the All-Union Scientific Research Institute of Corn, and they have regionalized the Moldavskiy 251 for Vinnitsa Oblast in the Ukrainian SSR. In recent years hybrids from Moldavian selection have been planted on more than 70 percent of the area for commercial crops in the republic.

An important reserve for increasing the gross yields of grains in the republic is the cultivation of corn with irrigation. Experimentation with Moldavian hybrids under conditions of irrigation showed their great potential capabilities. In the All-Union Scientific Research Institute of Corn the productivity of the new hybrids Moldavskiy 401 and Moldavskiy 1421 under conditions of irrigation was 114.3 and 11.2 quintals per hectare, respectively, which surpasses the standard, Dneprovskiy 50, by 18 and 15 quintals per hectare, respectively.



It should be noted that scientists of the Moldavian NIIKIS are exerting great efforts to find new possibilities of increasing the productivity of corn. The genetics laboratory is studying corn hybrids with changed plant morphology-- dwarf, nonligule, with grain filled tassles, low-lignin and others. Research is being conducted to include in early ripening lines corn with genetic plasma of the best highly productive late ripening lines, and special attention is being devoted to the creation of lines with clearly expressed elements of productivity--2 ears, long ears, multiple rows, large kernels and so forth. In the laboratory for selection of early ripening hybrids of corn research has been expanded for creating ultra-early and early hybrids for northern regions of the country and afterharvest plantings for Moldavia. Hybrids are being created with improved seed growing, which are intended to replace the double medium early hybrids, Moldavskiy 102 and Zherebkovskiy 86. Promising hybrids of corn are being included in extensive ecological testing in various agro-climatic zones of the Moldavian SSR and outside it using the lines SEV and Yeukarpiya, and their parent forms are undergoing forced propagation by the division of seed growing in conjunction with farms of the Gibrid NPO.

Seed growing plays a large role in obtaining large and stable yields of field crops. Moldavia has accumulated a certain amount of experience in organizing industrial production of seeds in specialized seed growing farms and associations. We have organized and are operating a network, in the first place, of specialized seed growing farms where we have concentrated the production of elite seeds of grain crops, oil-bearing crops and grasses for strain renewal and strain replacement; in the second place, specialized farms for producing and selling seeds for state resources; and, in the third place, rayon seed growing farms that are to provide seeds for planting all of the commercial area in the rayon. Experience in the organization of industrial seed growing shows that seed plantings should occupy 40-60 percent in the structure of the planted areas.

On specialized seed growing farms basic attention is concentrated on the production of seeds, and other branches develop to the extent that their combination has made it possible to efficiently utilize land, means of production, labor force and byproducts from seed growing. On all specialized seed growing farms it is necessary to have a stable structure of the planted areas and scientifically substantiated alternation of the crops. The cultivation of the soil, the system of fertilizers, the protection of plants from diseases and pests, and other devices should be directed toward annually obtaining large and stable yields of high-quality seeds with the least possible production risk. An exceptionally important role is assigned to these farms in questions of organizing accelerated propagation of the new, more productive strains and hybrids, which, as a result, makes it possible to reduce the time periods for their introduction into the republic's agricultural production.

A considerable amount of work is being done in the republic for selection of vegetable and fruit crops and grapes.

The main directions for selection work with vegetable crops involves the creation of strains and hybrids for industrial technologies of cultivation which are distinguished by comprehensive resistance to the most harmful diseases and high quality of the products that are obtained. The Moldavian Scientific Research

Institute of Irrigation Farming and Vegetable Growing of the Dnestr NPO they deal with the development and improvement of methods of the selection process, the search for new genetic sources, technological, biochemical and phytopathological evaluation of selection material, and also the direct creation of strains and hybrids of vegetable crops. During the years of the 10th Five-Year Plan selection workers and vegetable growers created and submitted for state strain testing 35 strains and hybrids and they introduced 20 of them on the farms of the republic and the country. Scientists of the Dnestr NPO in conjunction with the Academy of Sciences of the Moldavian SSR have developed and improved about 100 methods of evaluating and selecting specimens that accelerate the time for determining them 5-50-fold. The strains and hybrids of vegetable crops that have been created in the Dnestr NPO are being cultivated in 150 oblasts and krays of the Soviet Union on an area of more than 100,000 hectares, and on 2,000 hectares of protected ground.

Under the current five-year plan it is intended to create 29 strains and hybrids of vegetable crops, the majority of which should be early ripening. We have already had a certain amount of success in this area. Thus the early ripening hybrids of tomatoes that have been obtained make it possible to obtain products 5-7 days earlier than with the regionalized strains, and with a potential productivity of 800 quintals per hectare. For hybrid tomatoes with a productivity of about 1,000 quintals per hectare with combine harvesting it is planned to increase the content of dry substances to 6.5 percent, and sugars--to 3.5 percent. The new hybrids of tomatoes for covered ground make it possible to obtain a yield of up to 18 kilograms, and cucumbers--up to 36 kilograms from 1 square meter in the winter and spring crop rotation.

The strains and hybrids of cucumbers for open ground should be distinguished by high pickling qualities and with one harvest they should provide for productivity of 350 quintals per hectare. The same tasks exist for improving strains of early ripening peas, winter bolting garlic and table carrots.

The Dnestr NPO has achieved great success in seed production. This association provides 48 percent of all the arable land used for seed growing. Each year the production of seeds amounts to 24,000-25,000 quintals, and the sale of seeds increased under the 10th Five-Year Plan by 81 percent as compared to the 9th.

In the republic's traditional branch, grape growing, scientists of the Viyerul NPO have made a large contribution to the creation of new, highly productive and comprehensively resistant strains. The joint work of immunologists, physiologists, biophysicists and selection workers during the past 5 years has made it possible to conduct a detailed evaluation of all the selection material in various stages of selection and to classify the strains and the elite seeds in terms of the degree of their resistance to the main fungal diseases and phylloxera as well as for winter hardiness and frost resistance. Raising hybrid material in hot-houses with hydroponics, applying various physical factors, has contributed to accelerating the selection process, which provides for acceleration of the development of hybrid seedlings (from the seed to the fruit bearing stage takes 3-15 months). The Viyerul NPO has created 17 new strain specimens of grapes, of which 10 have been submitted for state strain testing. Additionally, scientists of the Viyerul NPO are the codevelopers of 5 strains that were isolated in the Kishinyev Agricultural Institute.

In the fruit growing branch the Kodru NPO during 1976-1980 submitted 55 promising strain specimens for state strain testing, of which 24 were regionalized. An important part of the work of the Kodru NPO is the production of virus free planting material. To do this the entire volume of production of fruit seedlings, including vegetatively propagated seedlings, on farms of the association. The Moldavian Scientific Research Institute of Fruit Growing has studied a large selection of seedlings for all the varieties of fruit trees cultivated in the republic, has given concrete suggestions for regionalizing the best of them, and has developed efficient technology for producing fruit free seedlings which provides for a yield of up to 60 percent of the standard seedlings from each hectare of the nursery. The Kodru NPO annually produces more than 10 million seedlings.

Animal husbandry plays an exceptionally important role in successful implementation of the USSR Food Program. A large amount of work has been done in the Moldavian SSR to concentrate and specialize animal husbandry and change this branch over to an industrial basis. Three specialized NPO's have been created and are functioning in the republic, and there are also interfarm enterprises for producing milk, beef and pork, enterprises for raising large horned cattle to replenish the herd, and also a network of state and kolkhoz breeding farms. Selection and breeding work and solutions to problems of reproducing the herd of agricultural animals are coordinated by the Selection Center of the Moldavian SSR, which is a structural unit of the Zarya NPO.

What with the expanding volume of mechanization of production processes and the extensive introduction of industrial technologies for producing animal husbandry products, selection workers of the republic have been given the task of improving existing breeds, lines and hybrids and developing new ones in order to increase their productivity, the return from feed, and their resistance to diseases and stress factors, and in order to obtain high-quality products with reduced material and labor expenditures per unit of output. Maintaining a high reproductive capacity and creating animals with a uniform type of nervous activity that are suitable for raising under conditions of year around stable maintenance and limited movement are important requirements.

Selection workers of the NPO have developed and are implementing long-term programs for selection and breeding work with the main kinds of agricultural animals. In dairy cattle raising a most important task is to create a new kind of animal that is adapted to the natural, climatic and feed conditions of Moldavia. The accelerated process of intensification of dairy cattle raising on the basis of specialization, concentration and the introduction of industrial technology that has taken place in recent years in our republic has changed the requirements placed on the breeds of dairy cattle.

Dairy cattle raised in complexes and on mechanized farms must be distinguished by high productivity (4,000-5,000 kilograms of milk per cow), high return from feed, suitability for machine milking, strong health and resistance to infectious and noninfectious diseases, stress and other unfavorable factors.

The black spotted and holstein-friesian breeds meet these requirements most completely. Therefore these breeds are used for improving the local red steppe and simmenthal cattle and for developing a new type of dairy cattle from local selection with a milk yield of 4,000-5,000 kilograms, that has a fat content of 3.8 percent and a protein content of 3.2-3.3 percent.

According to a quality appraisal during 1975-1980, in the republic as a whole the milk productivity of the cross breed black spotted cattle exceeds that of the local initial breeds by an average of 203 kilograms with an insignificant reduction of the fat content (by 0.05 percent).

The development of new types of black spotted cattle from local selection is concentrated on 48 breeding farms of the republic. During the past 2 years the average productivity on these farms amounted to 3,424 kilograms of milk per cow per year, and on the Malayeshtskiy and Mikhalashanskiy breeding farms the productivity has increased by 850-900 kilograms during the past 7 years. The final goal of the breeding work is the creation of zonal types of Moldavian black spotted cattle, whose leading selection indicator in the first generation is milk productivity, and in the second and subsequent ones--the level of milk productivity, the marked characteristics of the type of breed, the adaptability to machine milking, stress resistance, resistance to diseases and other indicators.

In selection work with sheep of the Tsiganskaya breed basic attention should be concentrated on increasing the yield of pure wool, the live weight, the strength of the constitution and the resistance to diseases. A large amount of work has already been done to improve the breeds of sheep. In Tsiganskaya sheep raising the number of purebred sheep in 1980 amounted to 99 percent, and in 1974 it was 67 percent. There is also improvement in the class composition of the animals.

The organizational structure of large-scale selection work is cooperation of breeding farms when conducting selection and breeding work under the leadership of the scientists of the Zarya NPO. Scientific research and selection work in karakul raising is directed toward creating a highly productive herd of karakul sheep. Most of the work is done on the breeding sovkhov imeni Kotovski of the Zarya NPO, where a highly productive herd of karakul sheep is being created. The breeding sovkhov has more than 5,000 highly productive karakul sheep that are ready to be sold to the kolkhozes and sovkhovs of the republic.

The republic is continuing selection work for utilizing grey karakul rams. For a number of years on certain farms the proportion of grey ewes has reached 32 percent. The work to create a breeding base for karakul raising is being conducted on 5 kolkhoz breeding farms which have a breeding nucleus of karakul sheep. The Grigoriopol'skiy sovkhov of the Zarya NPO has shipped in 1,200 breeding ewes and has begun to work on creating a breeding farm for karakul sheep of the sur type.

The main task of selection and breeding work in karakul raising during the present period is to expand the network of breeding farms and reproduction farms in order to satisfy the needs of the kolkhozes, sovkhovs and population of the republic for young breeding animals, for which it is planned to raise for sale no less than 1,5000 breeding rams and 10,000 replacement lambs.

A comprehensive and immediate solution to problems of breeding work and reproduction of animals will make it possible to introduce large-scale selection in Tsiganskaya and karakul sheep raising in the republic and thus radically change and improve the state of affairs in this branch.

Hog raising in Moldavia is a branch that provides more than half of the entire volume of meat production. The rates of development of hog raising will be high in the future as well. The processes of concentration and specialization of hog raising on the basis of industrial technologies, which are taking place in the republic on a large scale, set principally new requirements for the development of the branch. They are conditioned by a complex of factors and are manifested in processes of deepening of the tie between science and production, continuous quality improvement of the organizational structure of the branch and the system for selection and breeding work and production technology, and also by the nature of the interactions between breeding farms and commercial production enterprises. In order to solve these and other problems related to comprehensive development of hog raising, the Progress NPO for hog raising has been created in the system of the Moldavian SSR Ministry of Agriculture.

The organizational structure of the hog raising branch is a network of farms, enterprises and specialized enterprises of the industrial type for breeding and commercial production. The structure of the breeding hog raising involves breeding hog sovkhozes, reproduction farms and a controlled-experimental station. Commercial hog raising includes commercial farms of the kolkhozes and sovkhozes, interfarm fattening enterprises and interfarm enterprises with a closed cycle of pork production which operate on a flowline industrial basis that envisions a complete and continuous cycle of pork production--from receiving the piglets to releasing the fattened hogs to the meat processing industry. Such an organization of the branch makes it possible to carry out work for creating initial material for crossing and hybridization in commercial hog raising in a purposive way and on a large scale in each of the subdivisions.

One of the republic's large achievements is the creation of its own base for breeding hog raising. Each year it raises and sells 55,000-60,000 high-class breeding hogs for filling in and regularly replenishing the basic herd of commercial hog raising. This has made it possible to reduce mass importing of breeding hogs, and now Moldavia delivers them to other union republics.

The genetic potential of hogs in the republic is comprised of the large white, landras, Estonian bacon and Dyurok breeds, and specialized lines. Breed testing and economic evaluation of the breeds show that under normal conditions of feeding, care and maintenance, the sows of the breeds that are propagated produce 10-12 and more piglets per farrow, weighing 1.2-1.4 kilograms each; the milk production amounts to 50-55 kilograms. The preservation of the piglets in the prenursing period is high, and when they are 2 months of age 1 piglet weighs 18-20 kilograms. The young animals of these breeds and lines, with intensive fattening, reach 100 kilograms at the age of 6-7 months with the expenditure of 3.8-4.2 feed units per 1 kilogram of weight gain.

A most important criterion lies at the basis of the genetic models of modern programs for the selection of hogs: productivity. Direct selection for this contributes to obtaining maximum economic effectiveness. In the selection process one also takes into account the reproductive capability, health, return from feed, adaptability to conditions of the environment, stress resistance and expansion of the adaptive capabilities of the animals. An important place in improving the productive indicators of hogs is assigned to improving



the fattening and meat qualities, control fattening that is done at the control-experimental station for hog raising, and control raising and evaluation of the young animals in terms of their productivity directly on the breeding farms.

Work is being done to create and improve specialized lines of hogs that are intended to be used in hybridization. Hogs of meat lines are distinguished by high indicators of growth energy, return from feed and good meat qualities, and in them the most valuable part of the body is well developed--the rear hams. In terms of fattening and meat qualities they meet modern requirements and are on a level with the best domestic breeds.

Selection and breeding work in hog raising at the present time and in the future will be carried out in keeping with the comprehensive plan of measures for further improving breeding in animal husbandry, where the Progress NPO occupies an important place. It has completed the construction of a control-experimental station for inspecting 3,000 head at one time, with individual maintenance, and it is planned to construct a hog breeding farm to accommodate 800 basic sows.

In successfully carrying out the tasks for maximally increasing the production of eggs and poultry meat, a decisive role is played by selection and breeding work conducted by the Moldpitseprom NPO. The basic tasks facing the association's collective are to maintain the existing genetic stockpile for poultry, to utilize it to create and improve industrial crosses, and to increase their adaptive capacities, resistance to various diseases, early maturity, return from feed and the effectiveness of the poultry raising branch as a whole, and to develop and introduce completed technologies for the production of poultry products. During the years of the 10th Five-Year Plan the two-line crosses, Kristall-5, Berezhka-15 and Sura-7, were tested for productivity and programs were drawn up for their further utilization. The Zarya-17 and Khayseks kroichnevyy four-line crosses were introduced into production.

A large amount of work has been done in the area of meat poultry raising. A testing of the Broyler-6 showed that four-line final hybrids surpass hybrids of previously propagated crosses 1.2-1.3-fold in terms of live weight at 8 weeks of age. A new cross of turkeys, Kh-P, Obroshinskaya and Cuban geese, and turkey hens of the Khidon cross have been shipped in, tested and propagated. A principally new approach was taken in selection because of the intensive technology of maintaining poultry and the necessary accounting for the interrelations between genotype and environment. The introduction of the promising cage method of maintaining selection poultry of egg breeds made it possible to increase the output of young animals per unit of area of the poultry house 1.5-2-fold and to sharply advance the science of selection work.

The method of prolonging the time periods of productive utilization of hens for eggs and meats by forced moulting, which has been approved and applied in practice, has made it possible to utilize highly productive poultry more efficiently and to obtain during the entire productive period 450-470 eggs from the average laying hen that is fed on forage and 260-300 eggs from the average meat hen that is fed on forage.

For the first time the republic has developed, perfected and introduced into production a method of artificial insemination of hens in batteries of cages of various designs. The organization of selection and breeding work in egg poultry



breeding in the Moldavian SSR is based on efficient technological interaction among breeding farms, the main one of which is the breeding plant. In 1976, on the basis of the Dubossary state poultry breeding plant the production of eggs was organized into a powerful poultry breeding complex which makes it possible to do in-depth selection work with four lines of hens, including with large maintenance, to propagate the most productive lines, to obtain heterositic chickens, to provide all commercial poultry farms with hybrid hens and to test new lines and crosses.

The creation of the poultry complex for egg laying hens on the basis of the Dubossary GPPZ makes it possible not only to conduct selection work with good results, but also to fully satisfy the republic's need for young hybrid laying breeds for industrial flocks on poultry farms.

In the future it is intended to direct the efforts of selection workers toward the creation of lines and breeds that are adaptable to industrial technology. In this connection a greater role is assigned to selection for indicators that bring about strength of constitution, stress resistance, and intensiveness of reproduction, growth and development. To this end the Moldptitseprom NPO is creating collective flocks and genetic stalks of poultry of egg and meat-egg breeds of ducks, turkeys and geese, including local populations, and they will be included in the selection program, mainly in order to increase the vitality of the poultry.

And so practical realization of the achievements of Moldavian scientists in the area of selection, seed growing, breeding work, hothouse plant growing and industrial technologies plays an important role in increasing the production of agricultural products. Under the 10th Five-Year Plan alone, as compared to the 9th, farms of the NPO increased the production of seeds of grain crops by 35 percent, vegetable crops--by 42 percent, sunflowers--by 47 percent, parent forms of corn hybrids--1.5-fold, alfalfa--2-fold, and fruit tree seedlings--almost 3-fold. The number of young breeding large horned cattle that have been raised and sold is 29 percent greater, and hogs--a 2.3-fold increase. This creates a real basis for realizing the great intentions of the 26th CPSU Congress concerning the development of the republic's agro-industrial and food complex.

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## REGIONAL DEVELOPMENT

### ROLE OF SCIENCE IN SERVICE OF FOOD PROGRAM SET FORTH

Kishinyev SEL'SKOYE KHOZYAYSTVO MOLDAVIA in Russian No 11, Nov 82, pp 10-11

[Article: "Scientific Potential--In the Service of the Food Program"]

[Text] In our day the intensification of agriculture is determined by the level of the introduction of the achievements of science into production. For in the final analysis it is not a simple increase in the investments per unit of agricultural land that can provide for increased output of products, but primarily qualitative changes in the means of production and methods of labor on the basis of the achievements of science and technology.

At the end of September in Moldavia there was an all-union seminar-conference on the introduction of industrial technologies for the cultivation, harvesting and processing of fruit and vegetable products and the organization of deliveries of fruits and vegetables to industrial centers of the country. Its participants became familiar with industrial vegetable raising in Zlobodzeyskiy Rayon and recognized that here there was a full manifestation of the advantages of industrial production of vegetables over the way they were raised 8-10 years ago even on model farms that were located on remarkable bottomland soil of the Dnestr area.

Last year, for example, the rayon received 370 quintals of tomatoes from 5,320 hectares, and expended less than 3 man-hours per quintal of this valuable product. In the interfarm crop rotation, organized on the basis of the Kolkhoz imeni Michurin and the Kolkhoz imeni Sverdlov, they raised more than 500 quintals of tomatoes per hectare.

Of course the creation of high-yield mechanized gardening in the rayon required an immense amount of organizational work and large material investments. But the essence lies not only here. Industrial vegetable growing was largely the result of the creative search of scientists, the result of purposive and persistent introduction of the achievements of science and technology into production. In particular, industrialization of vegetable growing became possible because selection workers of the Moldavian Order of the Labor Red Banner Scientific Research Institute of Irrigation Farming and Vegetable Growing created strains and hybrids that are suitable for combine harvesting and also arranged the growing of these seeds and energetically introduced this into production.

A decisive role in this matter was played by the creation of the Dnestr Scientific production association, because of which the interests of science and production were combined and the time periods for the introduction of scientific developments were reduced. In this association each ruble invested in scientific research during the years of the 10th Five-Year Plan was recouped in 1955.

The strains and hybrids of vegetable crops isolated in Tiraspol not only take up the lion's share of the areas allotted to gardens in our republic, they are popular far beyond Moldavia and represent the achievements of Moldavian selection workers and vegetable growers in international competitions and exhibits.

The Varnitsa agro-industrial association has taken prizes in the country's socialist competition of canning workers for several years now. It gained authority largely because of the application in production of the achievements of science and advanced practice. This also includes the introduction of the method of aseptic storage of products and the shipment of vegetables and fruits in vats of water, and the transportation of tomatoes to the plant in the form of pulp.

The system of supplying the population with fresh fruits and vegetables that is supplied by the Varnitsa APO has received a good evaluation from specialists and workers. The combine has its own fruit and vegetable procurement trade enterprise with 15 firm stores in Bendery and the same number of temporary trade pavilions and permanent trade points in large enterprises of the city. This subdivision of the association regularly delivers vegetables and fruits to the stores directly from the fields with its own transportation. It is no accident that Bendery has the best supply of fruits and vegetables of any city in Moldavia.

One must discuss an interesting peculiarity of the work of the fruit and vegetable trade organization of the Varnitsa APO. In the evening the association uses its own transportation to gather unsold fruits and vegetables from the stores and delivers them to the plant for processing. Thus all of the products are used and there are no losses.

The board of the USSR Ministry of the Fruit and Vegetable Industry has considered the work experience of the Varnitsa agro-industrial association and recommended that it be applied at other similar enterprises of the country.

The Selektiya scientific production association is gaining more and more prestige in the republic. Strains of grain, pulse and other crops isolated by selection workers of this association and the recommendation for the introduction of advanced agro-technical devices that have been submitted by the NPO are receiving high evaluations from production workers. For example, the recommendation of the Selektiya NPO for conducting winter planting under the difficult conditions of this autumn was timely. Taking into account the fact that the optimal planting times for winter crops had come to an end and the soil temperature had dropped, the scientists of the association recommended that the planting be conducted immediately, in spite of the lack of moisture in the soil, since the soil had been well worked even though it was dry, and the planting norm was to be increased by 20-25 percent. In the middle of October the rains

began and it seems that the farmers who followed this advice precisely and conducted the planting ended up with the advantage.

The Kishinyev Agricultural Institute imeni M. V. Frunze, which is celebrating its 50th anniversary this year, provides a considerable proportion of the republic's scientific potential.

A lengthy discussion of the tasks of science in connection with the implementation of the Food Program was held in December at a joint session of a general meeting of the USSR Academy of Sciences and a general meeting of VASKhNIL. They raised a number of large problems on which the scientists of the two academies should work jointly. These include raising the technical potential in agriculture, increasing the reliability of machines, improving their utilization, improving the selection of plants and animals, developing and extensively applying new methods of protecting them from diseases and pests, improving soil protection systems of farming, and utilizing and improving biotechnologies.

Among the most important requirements on the work of scientists in the modern stage is to orient farming toward energy- and resource-saving technologies.

A good deal of attention at this representative meeting of scientists was devoted to questions of further developing selection and improving seed growing. It was noted that the potential of many strains is realized by half at best. Strains of the intensive type are not provided with a sufficiently high agricultural background. Incidentally, the session gave a good evaluation to the work done in Moldavia for producing elite planting material of fruit crops.

In order to achieve optimal functioning of our economy, the scientists noted, it is necessary to increase direct autonomous financing motivation and responsibility of labor collectives for efficient utilization of resources, profitable farming and satisfaction of the demands of the consumer. It was recognized as important to develop the science of the agricultural worker himself, as the main figure in the activity of the APK.

One of the key areas where the integration of science and production is realized in practice and the union of creative thought and creative work is strengthened in our republic are interbranch scientific programs. The majority of them are related to the Food Program and therefore special attention should be given to them. These include, for example, the problem of developing biological foundations of an adaptive system of farming under the conditions of its intensification and concentration, the development and introduction of technology and technical means that provide for reduced losses of crop growing products during transportation and storage, and so forth.

In places where managers and specialists of the ministries, departments and farms occupy an active position in questions of solving interbranch scientific and technical problems, remarkable progress has been made in organizing the earmarked research and introducing the results of it into production. For example, a large amount of work has been done to prepare a land cadastre of the republic, which is largely to the credit of scientists and specialists of the Plodorodiye NPO, the Moldavian planning institute for land arrangement, and the

... of economic evaluation of land of the Scientific Research Institute of ... and Organization of Agricultural Production. But the utilization of data from the land cadastre when planning production and summing up the results of economic activity is being delayed which, of course, impedes the introduction of scientific methods of farming in Moldavia.

The magazine SOVETSKAYA MOLDAVIYA has printed a series of articles on questions of efficient utilization of land and water resources in the republic, including recommendations of scientists for introducing into production the results of research that has been conducted, but so far there has been no practical response to these articles. The interested departments and farms are not hurrying to begin work, wanting to avoid extra "troubles."

A powerful motive force of scientific and technical progress is improvement of the organization of research. There are many important aspects of this matter. They include the solidarity of the scientific collective and, for example, the degree to which scientific creativity has become collective. For only collective creativity makes it possible to intensify the development of science and to assimilate its results in practice. In our day one person is not capable of grasping the entire mass of problems that are to be resolved in one branch or another. It is also difficult to overestimate the educational role of the united scientific collective, especially for young scientists, in whose hands the future of science lies.

Unfortunately, there are also cases in scientific institutions where "co-authors" have attached themselves to science, unceremoniously reducing the fruits of the labor of others. This, as a rule, becomes possible in places where there is no strong nucleus of like-thinking scientists.

The state system of scientific and technical information plays an exceptional role in organizing research. The service's archives of scientific information in our country contain about 2 billion documents--reports on results of research and developments, descriptions of inventions, manuscripts that have been deposited, translations of foreign literature, domestic and foreign standards and many other materials.

It is very important to utilize the data of the information service before setting up a scientific or economic experiment, and when planning the production of one product or another. Especially now, when the central task of the work of scientific institutions and of the entire agro-industrial complex of the republic is to fulfill the Food Program. Without information about leading technologies, the best world and domestic models of products and other information, it is impossible to achieve either high quality of foodstuffs or good storage of it, or efficient delivery of it to the tables of the workers.

An approach to the matter in which achievements of science that have been approved are not introduced is not appropriate to state practice. Here is an instance: In the hothouses of the city of Kiev cucumbers isolated by selection workers of the Dnestr NPO are being raised with great success, scientists from Tiraspol, under economic agreements, are arranging the technology of raising hothouse vegetables in the capital of the Ukraine, and Kiev hothouses are being planted with costly seeds of foreign hybrids of cucumbers. Incidentally, ,

According to specialists, the taste qualities of these cucumbers are not as good, but they produce a greater mass, which, of course, is more advantageous for the trade organizations.

Among the usual characteristics of the readiness of a scientific subdivision or individual researcher or specialist to begin new developments one encounters increasingly frequently the word "information availability." It means, perhaps, first of all the appearance of a qualitatively new stage in the matter of accelerating scientific and technical progress and the introduction of the achievements of science into production.

Profound creative search and constant creative labor for the people, for the homeland, as well as energetic introduction of the achievements of science, technology and advanced practice into production constitute the most important factor in changing the country's economy over to an intensive path of development in keeping with the decisions of the 26th CPSU Congress.

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## REGIONAL DEVELOPMENT

### CALL FOR CLOSER TIES BETWEEN SCIENCE AND FOOD PRODUCTION IN MOLDAVIA

Kishinyev SOVETSKAYA MOLDAVIYA in Russian 13, Feb 83, p 2

[Article: "Strengthening the Tie Between Science and Production"]

[Text] At a meeting of the aktiv of the collectives of the Moldavian SSR Ministry of Agriculture held on 12 February in Kishinyev, they considered the results of the work of scientific production associations, sovkhoz-tekhnikums and state farms last year and the tasks for 1983 that ensue from the decisions of the May and November (1982) Plenums of the CPSU Central Committee.

The speaker, the republic minister of agriculture M. F. Lupashku and the discussants noted that the labor enthusiasm of the scientists, specialists and all workers of the fields and farms made it possible in the anniversary year to fulfill state plans for delivering high-quality seeds, selling breeding livestock and poultry and selling the state grain, sunflowers, tobacco, grapes, meat, eggs, wool and astrakhans. The ministry in conjunction with the Academy of Sciences and other institutions of the republic completed the development of a system of agriculture for the Moldavian SSR. They developed "Predictions of the Development of Scientific and Technical Progress in the Republic Agro-industrial Complex Up to the Year 2005." They also expanded research directed toward stable production of field products, increased fertility of the soil, the development of growing hybrid sunflower and corn seeds, intensification of feed production, and improvement of the selection process and industrial technology. More scientific research is being done to find ways of strengthening production and economic ties between agriculture and the branches of procurements, processing and sales of products, and to avoid losses of the crops.

Still it was noted at the aktiv that collectives of the NPO will have to do a great deal in order to improve their work. It is necessary to accelerate the creation and introduction into production of new strains and hybrids of agricultural crops and breeds and lines of animals that are adapted to conditions of large-scale production. The Gibrud association is still poorly coordinating and controlling the introduction of industrial technology for the cultivation of corn, whose potential is still being realized by little more than half. Industrial technology for raising other crops is also being disseminated slowly.

One of the most important factors in increasing productivity is well-organized seed growing. Despite the large amount of work for the development of the branch, there are still serious shortcomings in this important matter. Seed

growing farms of the ministry, although they fulfilled the plan for the production of the majority of crops, still produce many seeds of poor quality. The republic is well provided with planting material, but 16 rayons did not fulfill the plan for supplying seeds of grain and pulse crops and 14 did not fulfill the plan for perennial grasses.

The Viyeril NPO has not kept up with the assignment for producing grape seedlings. They did not devote enough attention to raising planting material of comprehensively resistant strains, virus free seedlings or high-quality strains with extremely early ripening times. More serious attention should be given to problems of organizing crop rotation and increasing the effectiveness of the irrigated lands. It was emphasized in the talks that, having land, technical equipment, personnel and scientific potential, the farms of the NPO should become the standard for farming.

One of the primary tasks set by the Food Program is to increase the production of animal husbandry products. The farms of the ministry have fulfilled and overfulfilled plans in terms of many indicators in this branch, but far from all reserves have been put to work. It is necessary to considerably improve the activity of the Zarya, Progress and Moldpitseprom associations, and to increase their contribution to the republic's meat and dairy balance. Questions of selection of animals for stress resistance and preservation of young, the development of a system of feeding using local production wastes and less concentrated rations, and preventing and eliminating diseases are still a bottleneck. Horse raising, rabbit raising, beekeeping, silkworm raising and fish propagation have been undeservedly neglected.

Those speaking at the aktiv emphasized that special attention should be devoted to the introduction of the brigade contract, and it is necessary to constantly improve the organization and payment for labor. It is also necessary to take into account the fact that the Leninist requirement to ensure the strictest discipline and responsibility of each person for the work he performs becomes especially important at the present time when economic ties are becoming increasingly complex and multifaceted and the results of production are increasingly dependent on the labor contribution of each worker.

Participants in the aktiv adopted socialist commitments for collectives of the ministry's system for 1983. Speaking at the meeting of the aktiv was a member of the Bureau of the Central Committee of the Communist Party of Moldavia, first deputy chairman of the Moldavian SSR Council of Ministers, G. A. Stepanov.

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KOLKHOZ-SOVKHOZ COLLECTIVE CONTRACTS PROMOTED

Moscow EKONOMIKA SEL'SKOGO KHOZYAYSTVA in Russian No 5, Apr 83 pp 72-77

[Article by G. Martyshkin and Yu. Proskurin: "For a Broad Introduction of the Collective Contract System"]

[Text] Problems of organizing more energetically the introduction of collective contracts at kolkhozes and sovkhozes in the light of the requirements of the Politburo of the CPSU Central Committee attracted the principal attention of the participants in the all-Union conference held on 18-19 March in Belgorod. The conference was attended by secretaries of the central committees of the communist parties of Union republics as well as of oblast and rayon CPSU committees, and also by ministers of agriculture of Union and autonomous republics; chiefs of oblast administrations of agriculture; heads of a number of APKs [Agro-Industrial Complexes], farms and subdivisions employing the collective contract system; representatives of the CPSU Central Committee and central ministries and departments; and scientists and representatives of the press, radio and television.

The participants warmly welcomed M. S. Gorbachev, member of the Politburo of the CPSU Central Committee and secretary of the CPSU Central Committee, who also attended the conference.

Reporting on the examination, at the regular session of the Politburo of the CPSU Central Committee, of the problem of energizing the introduction of the collective contract system in the countryside, the speaker stressed the great importance attached by the Central Committee of our party to this progressive form of the organization and remuneration of labor in kolkhoz and sovkhoz production, as well as to tightening discipline and cost effectiveness. To accomplish the tasks posed by the 26th CPSU Congress as regards increasing agricultural output, it is necessary to solve such acutely arising problems as increasing all crop yields and livestock productivity and the yield of capital outlays as well as expediting the growth rate of the production of fields and farms.

Ways of solving these problems are illuminated in the materials of the November (1982) CPSU Central Committee Plenum and the report by comrade Yu. V. Andropov at the ceremonial session in honor of the 60th anniversary of the USSR as well as in his article in the periodical KOMMUNIST on the occasion of the 165th anniversary of the birth of Karl Marx.

The gist of these materials is that a new impetus should be given to the accelerated development of all directions of economic and cultural construction by providing the economic and organizational incentives for highly productive labor and encouraging the initiative and resourcefulness of agricultural workers

while at the same time tightening responsibility for adherence to state-wide and nation-wide interests.

In accordance with the decisions of the May (1982) CPSU Central Committee Plenum, organizational and economic measures to improve the management of agriculture and other subsectors of the APK are being implemented, the economic machinery of management is being refined and the economics of the performance of kolkhozes and sovkhozes is being improved.

All this has provided new more favorable conditions for the introduction of cost-effectiveness analysis and the application, at kolkhozes and sovkhozes, of forms of the organization and stimulation of labor that hinge directly on its end-results.

A major instrument for solving this problem is the collective contract system. As shown by practice, teams working under this system produce 20-30 percent more output per area unit than do brigades and sectors that work under the same conditions but are paid on piecework basis. Collectives operating under such contracts display a much higher labor productivity and utilize capital investments more efficiently. Here the principal factor is the interest of the members of collective-contract teams in the end-results of their labor rather than in chasing after volume of operations accomplished as is being done by those paid on piecework basis.

M. S. Gorbachev cited a number of instances of successful performance by production subdivisions operating on collective-contract basis. He noted that, as experience shows, the collective contract is the optimal form of intra-farm cost-effectiveness relations, based on combining the interests of the contractor (the brigade, farm or sector) with those of the customer (management of sovkhoz or kolkhoz) in producing a large quantity of final output. A numerically small labor collective pledges itself to produce the quantity of output specified in the contract, while the farm management, on its part, obligates itself to provide that collective promptly with the needed supplies and proper working conditions for fulfilling the task as well as to pay for the produced output at rates specified in the contract.

The speaker stressed the need for a strict adherence to the contract terms on the part of not only the contractor collective but also the heads of the enterprise. He pointed out that contractor teams can autonomously decide on complementing their membership and elect the director and the representative body--self-government--the council of the subdivision, detachment or brigade. Contractor collectives should be granted broader rights for adapting technologies to weather conditions and other changes in the organization of production.

Objective premises for a broad introduction of the collective contract system now exist universally. Most kolkhozes and sovkhozes have adequate equipment and the mechanization of labor is much greater now. The general and special educational background of the present-day mechanizer is such as to qualify him not only to issue directive-type orders targeting specific operations but also to take an active part in the control of production processes within the framework of the primary teams. All this serves to assign to comparatively small collectives the equipment needed to perform operations within the confines of the crop rotation system without diverting their members for other farm operations. Despite the evident advantages of this new progressive form of the organization of labor and wages, and despite the favorable conditions existing for its universal

application, the collective-contract system is as yet being introduced on a slow and inadequate scale.

M. S. Gorbachev stressed that the application of the collective contract system requires of the managerial personnel of kolkhozes and sovkhozes and agricultural organs more deliberate planning and economic analysis, elevation of the general level of the control and organization of production, strict adherence to technological discipline and a marked improvement in the performance of the economic services.

Unfortunately, these requirements are not always being met. Many farm managers and experts refrain from taking the initiative in introducing the collective contract system. This is due not only to habit and tradition, passivity in changing the existing forms and methods of organization and stimulation of production on farms, but also to the underestimation of the importance of this matter.

Not infrequently the formation of contractor collectives is handled in a formalist manner. They are organized in disregard of the principle of voluntariness. When determining the procedure for payment of wages and bonuses the opinion of workers is often ignored. Kolkhoz and sovkhoz heads do not fulfill their contractual obligations and divert mechanizers for work on other sectors.

At the same time, many farms unjustifiably pay all sorts of extra allowances for the conduct of discrete operations (planting, inter-row cultivation, harvesting). In such cases incentives for end-results prove minimal and do not operate as adequate stimuli. The overall earnings of pieceworkers, particularly in poor agricultural years, are higher than those of the members of contractor collectives. Even so, however, non-piecework teams attain better results than brigades and groups paid on piecework basis. Not infrequently this perturbs the contractor teams and in most such cases results in their disintegration.

M. S. Gorbachev pointed out that the introduction of the collective contract system should be a major direction of the practical activity of agricultural ministries and departments, scientific-research organizations, and trade-union bodies.

The speaker specified a number of basic requirements which, in the opinion of scientists and experts, must be met when introducing the collective contract system:

- voluntary joining in regular work collectives (brigades, detachments, sections), and full autonomy of these collectives in performing their production targets;

- regular long-term assignment, as a rule, to the contractor collectives of such activities as crop rotation or the growing of a set of crops, the operation of agricultural equipment or the raising of a livestock herd, so as to keep their members busy with contract work on a year-round basis, insofar as possible;

- assignment to contractor sub-units of economically justified and cost-effective tasks with allowance for attained levels of output, progressive norms for the consumption of raw and other materials and resources and the assurance of proper bookkeeping;



--basing remuneration on stable--over a number of years--higher or progressively rising rates payable for output depending on the levels of crop yields and livestock productivity as well as on bonus rates for increase in labor productivity and output, improvements in quality of output and reduction of production cost;

--paying guaranteed wages in poor harvest years as based on rates payable for the volume of operations performed;

--the incentive pay system for final production should be maximally simple and easy to grasp and it should provide for a substantial proportion of extra pay allowances and bonuses in the overall earnings of workers.

Further, M. S. Gorbachev dwelled on aspects of ideological work and the requirements posed to party organizations in connection with the mass transition of farms to the collective contract system. He pointed out that many progressive initiatives spread widely and are effective particularly when they meet with solid support from rayon party committees and primary party organizations. This is demonstrated by the experience of a number of rayon party committees whose organizing role was decisive to assuring a broad introduction of the collective contract system.

In conclusion, M. S. Gorbachev declared that all practical measures to implement the 1983 plans for increasing output and procurements should be constantly meshed with the Food Program, as required by the decisions of the November (1982) CPSU Central Committee Plenum.

All speakers at the conference pointed out that the solution of such important problems as the accelerated expansion of production and effective and rational utilization of land, equipment and other material resources and capital outlays hinges largely on the collective contract system, based on the universal introduction of authentic intra-farm cost-effectiveness analysis.

A. I. Iyevlev, Deputy USSR Minister of Agriculture, described in detail the work of agricultural agencies to introduce progressive forms of the organization and remuneration of labor. Thus, in 1980 the collegium of the USSR MSKh [Ministry of Agriculture] had, jointly with the Presidium of the Central Committee of the Trade Union of Agricultural Workers, considered the topic "On the Work of Agricultural Agencies in Nikolayev and Rostov Oblasts to Improve the Forms of the Organization and Remuneration of Labor in Farming" and in 1981, "On the Work of Agricultural Agencies of the Uzbek SSR MSKh to Introduce in Kolkhozes and Sovkhozes a Piecework-Bonus System of Labor Remuneration With Scheduled Pre-payments." and lastly in January 1983, "On the Work of the Ukrainian SSR MSKh to Introduce the Collective Contract System in Farming." A number of conferences was held for high-level administrators from the Union republic ministries of agriculture as well as managers and experts from farms in various zones on the subject of a broad introduction of the collective contract system. Further, comrade Iyevlev cited instances of successful work of contractor collectives in various zones of the country, dwelled on the shortcomings hampering the universal introduction of the collective contract system and described the measures being taken by the USSR MSKh to energize the work on the broad introduction of this progressive system of organization and remuneration of labor.

V. P. Nikonov, the RSFSR Minister of Agriculture, reported on the work of his republic's agricultural agencies to introduce the collective contract system, on



paying special attention to obstacles that must be eliminated before this new form of the organization and remuneration of labor can spread unhindered. On many farms the production autonomy of contractor collectives is consistently violated and they not infrequently are assigned unrealistic plan targets and prevented from participating in planning, analysis and the solution of problems of their material and moral stimulation. All this definitely is not conducive to the stability of these collectives. The principle of voluntary joining is not infrequently violated when forming contractor brigades and sections, and such an important requirement as the optimal size of the sub-units also is disregarded. Comrade Nikonov described a number of measures being taken by the RSFSR MSKh to eliminate these shortcomings.

F. P. Sen'ko, the Belorussian SSR Minister of Agriculture, described the experience in introducing the collective contract system in his republic and cited instances of successful work of contractor collectives. Currently such collectives operate in 72 percent of all farms. The broad introduction of the system was promoted by purposive organizational work of party and Soviet organs. Scientific-production conferences and meetings of party activists were held in all oblasts of the republic for a thorough discussion of ways and means of introducing the collective contract system. In most rayons seminars on the problems of the application of new forms of the organization and remuneration of labor were held on the leading farms. Recommendations for introducing the collective contract system were drafted with the participation of scientists and transmitted to brigades and sections.

Comrade Sen'ko devoted much attention to aspects of advance payments for mechanizers prior to the final settlement of accounts for production and distribution of wages according to end-results. He expressed the opinion that the final word on the principles for distributing earnings should belong to the collective itself. The particular forms of resolution of these problems may vary broadly.

Yu. T. Buzilov, director of the VNIETUSKh [expansion unknown] noted that, in accordance with the decisions of the May (1982) CPSU Central Committee Plenum, important measures were taken to strengthen kolkhoz and sovkhoz economies. All this is creating a favorable climate for a broad introduction of the collective contract system. Farm managers were granted the right to fix stable output pay rates for contractor collectives for a period of up to 5 years in advance. As for these rates themselves, they are set according to the actual mean crop yields during the preceding 5 years. Extra pay allowances for output also were augmented: they now can reach as much as 50 percent of the base pay. If it is considered moreover that farm managers have the right to grant incentive pay for end-results of production under the existing provisions governing remuneration, inclusive of pay allowances for output and a high quality of performance, as well as of production bonuses, and also that they have the right to fix progressively rising pay rates, it becomes obvious that under these conditions the earnings for end-results of work may account for a substantial part of the overall earnings of the members of contractor collectives.

A. M. Yugay, department head at the VNIIESKh [All-Union Scientific Research Institute of Rural Electrification] concentrated in his speech on psychological factors in the organization and performance of contractor collectives. He stressed that the formation of brigades and section on the voluntary principle results in extremely close interpersonal relations within these collectives, as reflected in feelings of solidarity and mutual reliance and trust. The

mechanizer feels a proprietary interest in the land assigned to him. Yet not infrequently all these accomplishments achieved by meticulous labor and prolonged educational work are ruined by the interference of farm managers and experts in the production activities of the collective. A section or brigade may be repeatedly disbanded and re-formed during a year and mechanizers may be assigned to unscheduled work on the farm under the pretext of its special urgency. As a result, some mechanizers become mistrustful of the possibility of receiving substantial incentive pay for the end-result of the work they do within their own brigade or section and they strive to make up for the lost earnings by doing piecework operations on the farm. These shortcomings are not infrequently the principal cause of the disintegration of some contractor collectives. Further, comrade Yugay dwelled on the optimal recommended size of contractor collectives, which was determined on the basis of studies and the practical experience of farms in various zones of the country.

Many heads of farms and contractor collectives from various oblasts and republics took the floor at the conference.

Considerable interest of the conference participants was aroused by the speech of Hero of Socialist Labor Ye. A. Yakovlev, section leader at the "Mir" Kolkhoz in Torzhokskiy Rayon, Kaliningrad Oblast. As far back as in 1971 he had been heading a mechanized section remunerated on the basis of the piecework-bonus system with scheduled advance pay at the experimental farm of the Scientific Research Institute of Flax. Already in the first years of its operation the section attained such high results that it gained publicity and delegations wishing to learn about its experience traveled to the farm. Comrade Yakovlev himself repeatedly spoke at seminars and conferences as a propagandist for the collective contract system. Even so he observed mistrust in his experience, with some people openly alleging that his section was operating under especially favorable conditions that do not apply to the run-of-the-mill kolkhoz or sovkhoz.

So now following the 26th CPSU Congress he transferred to the neighboring "Mir" Kolkhoz in order to demonstrate in practice the feasibility of successful work of contractor collectives on ordinary farms that differ in no way from most others. With the assistance of the kolkhoz board and farm experts, two identical brigade sections were established. One section was headed by Ye. A. Yakovlev and the other by A. I. Gurina. Each was allotted the same planting targets: 244 hectares of flax, 150 hectares of potatoes and 250 hectares of perennial hay grasses. In their first year both sections performed well. In the section headed by comrade Yakovlev crop-yield indicators proved to be twice as high as the rayon-wide average, breaking all records at the kolkhoz. For now every hectare under flax planted by the section yielded more than 1,000 rubles in income, whereas previously for the kolkhoz as a whole the income per hectare averaged only 50 rubles. Output per section member was 90,000 rubles. Thus while in 1980 the kolkhoz operated in the red to the extent of 600,000 rubles, in 1982 it scored profits of 1.1 million rubles--solely owing to crop growing, which was handled by the two contractor sections, considering that its animal husbandry remained unprofitable.

Dwelling on the practical organization of the contractor collective, comrade Yakovlev stressed the importance of concluding a contract between the kolkhoz board and the section so as to define the obligations of both parties, and of rigorous adherence to the terms of the contract. Pursuant to its contract, the section is allotted output targets and targets for expenditures of labor and resources as well as a specified wage total. Until the end-results of production

obtained, the members of the section are paid for their work time at rates for tractor and machine operators. The section leader receives 20 percent extra pay in the mechanizer wage category. The section spends 85-90 percent of its work time on working the land assigned to it. The earnings of the section's mechanizers in other farm subdivisions are kept in the section's "kitty" and distributed among the section's members according to the end-results of labor.

Speaking of the causes of disintegration of contractor collectives and the obstacles to the broad introduction of the collective contract system, Comrade Yakovlev noted that much here depends on the attitude of farm managers and experts. After all, they have to expend considerable effort on organizing such collectives and providing the conditions for their normal operation--and this scares off many of them. It happens not infrequently that mechanizers grasp the importance of the collective contract system better than do farm managers. There is also a lack of substantiated guidelines for the make-up of the contractor sections and the size of lands to be assigned to them as well as the variety of the crops to be placed under their charge. In comrade Yakovlev's opinion, the instances of disintegration of contractor collectives are due to the frequent diversion of their members for other farm operations.

The contractor collective of V. T. Butym from the sovkhos-technikum in Turgay Oblast, Kazakh SSR, works under totally different conditions. His 12-member brigade was assigned 5,819 hectares of plowland (of which 4,347 hectares are planted with grain crops and 1,472 hectares are pure fallows) along with eight K-70 tractors and 10 SK-5 combine harvesters and the needed variety of other agricultural machinery and implements.

The experience of 2 years of operation of the brigade showed that this new system of the organization and remuneration of labor fully justifies itself also under the difficult conditions of the arid zone of Kazakhstan. Of course, in the acute drought year of 1982, the harvest of the contractor brigade was lower than in the preceding year. Even then, however, it was 40 percent higher than the sovkhos-wide average. Thus while in the relatively good harvest year 1981 the gap in harvesting yields between the contractor collective and the other subdivisions of the sovkhos was 1.7 quintals per hectare, in 1982 it rose to 3.6. All this graphically demonstrates that contractor collectives can work successfully under difficult weather conditions.

And the brigade of N. V. Duboshin from "Rodina" Sovkhos, Kuybyshev Oblast, grows fodder crops on 731 hectares of irrigated land. Of course, harvests on irrigated lands are higher than on sandy soils. Even before the conversion to the collective contract system, the members of that brigade harvested 30-35 fodder units per hectare. Following that conversion, they began regularly to harvest 50-55 fodder units per hectare from the same land.

The brigade is relatively large, consisting of 22 mechanizers. But if the same area of land were to be worked by a team paid on piecework basis, under the regular quotas it should consist of 35 persons. It turned out that the contractor collective still has a considerable potential. Since the beginning of the current five-year plan period the collective has broadened the range of its duties and begun to feed young horned cattle with the fodder it grows. Last year the mechanizers fattened and delivered to the state 553 head of cattle averaging 410 kg in live weight. This year they intend to fatten 1,000 head and sell to the state 450 tons of meat. The land assigned to the brigade accounts for only 15 percent of all of the sovkhos's land under fodder crops, but the brigade grows

30-42 percent of all fodder produced at the sovkhos and its production cost is moreover 35-40 percent lower than for the sovkhos as a whole.

V. Kh. Zherebtsov, chairman of the "Krasnaya Zarya" [Red Dawn] Sovkhoz in Svezhinskiy Rayon, Kirov Oblast, declared that at his kolkhoz all principal crops are grown on the basis of a collective contract. The contractor collective for growing and preparing fodder had first been formed there in 1975. Eight years have passed since the collective has been providing the entire socialized herd at the kolkhoz with succulent fodder and, in summer, with green feed as well.

Owing to the work of the entire contractor collective, the kolkhoz no longer has to buy hay and other feeds outside and the productivity of its animal husbandry has markedly risen. Thus, the milk yield per cow increased by 400-500 kg [per year], while the average total weight gain of large horned cattle increased by 200 g daily. During the 10th Five-Year Plan period milk and meat output per 100 hectares of cropland increased by 75 and 40 percent, respectively, compared with the 9th Five-Year Plan period.

Currently the section consists of nine mechanizers to whom are assigned 500 hectares of land, including 237 hectares of reclaimed land. In the course of the year the members of this collective receive advance pay calculated at the rate of 5 rubles per day. Toward year-end they also receive a lump-sum payment for their overall output with allowance for its quality. The payment per ton of grade-1 mown hay is based on piecework rates plus 40 percent and per ton of grade-2 hay, on the same rates plus 20 percent. For grade-1 silage the extra pay is 60 percent and for grade-2, 30 percent; there is no extra pay for grade-3 silage. Such a system interests all members of the section in the end-result of their labor--the quantity and quality of the fodder prepared.

The section receives those end-result payments after it completes its harvesting operations, fall planting and soil plowing and after it repairs and stores for the winter all tilling and harvesting equipment as well. All this is completed in the fall, not later than by October.

Such a form of organization of labor promotes the initiative of workers and helps explore additional potential for increasing the quantity and improving the quality of fodder. Thus, during the first year of this new style of work, the section sowed grain mixes by the sow-row method and planted sunflowers in pure form. A sizable quantity of fodder had been prepared, but the quality of silage was low. The following spring sunflowers began to be planted in windbreak rows, in a mixture with pulse crops. One seeder would broadcast sunflowers and the other, peas, oats, vetch. Silage from such a field was much more protein-rich and its quality had improved.

The section will never plant without fertilizers. At present, ammonia liquor is spread over the entire planting area (at the rate of up to 1 ton per hectare), and planting is invariably coupled with the application of complex fertilizers or granulated superphosphate (1.5 to 2 quintals per hectare).

All this has caused silage-crop yields to increase from 150 to 270 quintals per hectare--and on reclaimed lands to 300 quintals per hectare. In 1982 the section prepared 5,303 tons of silage against the planned 3,350 and 1,300 tons of baled hay against the planned 1,200 tons. Output per section member was 1,510 quintals of fodder units and productivity per hectare exceeded 29 fodder units.

The increase in fodder output is accompanied by a decrease in labor expenditures and production cost. Thus while prior to the introduction of the collective contract system as many as 15-20 manual workers used to process silage and mown hay, now none of them is needed in the silo trench. This work is now handled by a specially rigged compacting device mounted on a DT-75 [tractor]. The labor expenditures per ton of hay and silage amount to 0.9 man-hour. Last year the production cost per quintal of hay was 1 ruble 74 kopecks and per ton of silage, 1 ruble 62 kopecks. Based on last year's results, for each such ruble the section received 1 ruble 12 kopecks in extra pay and bonuses.

A. M. Samoylenko, section leader at the "Risovyy" [Rice] Kolkhoz in Crimean Oblast, described the experience of his fodder-producing section operating on the basis of a collective contract.

This sovkhos contains 6,300 hectares of plowland, of which 5,000 hectares are irrigated. Its average annual output amounts to 19,600 tons of grain, 1,490 tons of meat, 5,400 tons of milk and 440 quintals of wool.

A major problem is that of producing fodder for animal husbandry. The solution of this problem was entirely entrusted to autonomous teams. Initially, in 1978, six mechanized teams were formed and each was assigned an average of 300 hectares of irrigated land. Later, crop rotation was added to their duties. This served to bring the collectives closer to the land worked and enabled mechanizers to spend most of their time on work to cultivate the crops assigned to them.

Currently two teams at this sovkhos operate on collective contract basis. Each consists of 22 mechanizers and is responsible for about 900 hectares of land.

Last year these teams both grew 645 quintals of silage corn per hectare, 1,017 quintals of fodder beets per hectare, 628 quintals of perennial grasses for silage per hectare and 122 quintals of hay per hectare. On irrigated lands they produced 98 quintals of fodder units per hectare compared with the sovkhos-wide average of 73 quintals per hectare. Gross output per team member was 17,700 rubles compared with the sovkhos-wide average of 7,600 rubles.

The other economic indicators of contractor collectives also are markedly superior. For example, the teams' production cost per quintal of wheat was 5.27 rubles; fodder root crops, 1.12 rubles; and silage, 0.71 rubles, whereas the corresponding figures for the sovkhos as a whole were 27 and 47 percent higher, respectively.

Under the contract agreement by team members, their advance wage payments are differentiated depending on the seasonal peaks of operation, and amount to: 100 rubles per member during December-March; 140 rubles per member in April, May, October and November; and 160 rubles in June-September. Their total monthly earnings inclusive of all extra pay allowances and bonuses amount to 410 rubles per member compared with the sovkhos average of 193 rubles.

A. M. Samoylenko stressed that the introduction of the collective contract system does not simplify the work of experts. On the contrary, now that this system prompts farmers and animal husbandrymen to take a proprietary interest in production, they expect of agronomists, zootechnicians and engineers practical advice on how to increase soil fertility and livestock productivity and utilize more effectively equipment, fertilizers and fodder under their particular farming conditions.



The same idea was expressed by N. S. Dovbenko, brigade leader at the Kolkhoz imeni 20th party Congress in Kominternovskiy Rayon, Odessa Oblast. The brigade has 27 qualified mechanizers of whom four are certified mechanics and the others are class-1 mechanizers. Current problems of production, work and living standards are considered by the brigade council, which consists of seven members. All members of the brigade have been cross-trained, which ensures their complete interchangeability.

The brigade was assigned 3,800 hectares of plowland and the necessary equipment. All work to grow the assigned crops is performed in accordance with technological flowcharts developed jointly with experts. Relations between the farm management and the brigade collective are substructured on contractual basis.

In the course of the year, until the final settlement of accounts for the end-results, the members of the brigade are paid for the operations performed in accordance with the output quotas applying at the kolkhoz, by a procedure determined by the collective itself.

Owing to the introduction of the collective contract system the difference between convenient and inconvenient work has vanished, work is remunerated according to the output achieved and the effectiveness of land utilization has increased sharply. Thus while in 1979, prior to the organization of the brigade, grain yields averaged 21.4 quintals per hectare, in 1982 they reached 34.1 quintals per hectare. The yields of grain corn rose to 51.9 from 20.2 quintals per hectare. The profitability level of grain production rose sharply from 38 percent in the initial period of formation of the brigade to more than 125 percent last year. In other kolkhozes in the same rayon this level does not exceed 75 percent. Gross output per brigade member was 39,000 rubles.

The collective form of the organization and remuneration of labor has now been practiced for 9 years at brigades of the Kolkhoz imeni Shchors, Chernobayevskiy Rayon, Cherkassy Oblast. This farm specializes in the production of grain and beets and has well-developed animal husbandry operations as well. The kolkhoz is an average-sized farm in the forest-steppe zone of the Ukraine; it contains 3,844 hectares of cropland, of which 3,610 hectares of plowland. Gross output in comparable prices amounts to 94,000 rubles per 100 hectares of cropland. Net income in 1982 was 1.2 million rubles and profitability level, 44.9 percent.

V. N. Skakun, chief economist at that kolkhoz, shared with the participants the experience in converting the farm's sub-unit to the collective contract system. He stressed that this system had been applied in one of the brigades in 1975 out of the desire to interest mechanizers in the competent and prompt performance of all operations under conditions when the manpower shortage began to make itself felt.

On that farm the introduction of the collective contract system was combined with improvements in the working and leisure conditions of the workers. Hence the number and composition of mechanizers in the brigades were fixed so that all operations could be performed even in peak seasons without burdening the mechanizers too much. At present there are 90 mechanizers to 54 tractors in the two brigades, that is, 5 persons for every 3 tractors.



...in addition to their direct work as operators of tractors, machinery, and combine harvesters, the mechanizers also work, as the need arises, as sowers, operators of tractor-mounted implements and assistants to combine harvester operators. They are skilled, competent and qualified, and hence they perform these operations more proficiently, too. At present the farm is adequately staffed with mechanizers, this being yet another consequence of the introduction of the collective contract system.

The large size of the brigades and the fact that they consist of mechanizers with varying qualifications, ability and attitude to work have also prompted exploring more flexible forms of the distribution of collective earnings so as to make a fairer allowance for the personal contribution of each member to the end-result of their work. The simplified approach to advance wage payments and year-end distribution of collective earnings had adversely affected the work discipline and output of certain mechanizers.

In 1982 the year-end distribution of collective earnings was performed with allowance for the coefficient of work participation (CWP) of every individual mechanizer. To this end, a specially adapted method for computing this coefficient was developed at the farm as a function of various indicators (category of mechanizer, complexity of operations fulfilled, combined operation of tractors and combine harvesters, etc.). The limiting values of this coefficient are 0.8 and 2, which serves to differentiate the distribution of the brigade's wage fund depending on the personal contribution of each member to the common results. The brigade council may revise the CWP within the limits of 10 percent upward or downward.

The collective wage fund consists of payment for production at piecework rates, extra pay, remuneration for operations not comprised within the crop growing technologies, and fees charged for repair and maintenance of farming equipment. The collective wage fund also includes all extra pay in kind (grain).

The introduction of the brigade contract system has contributed to rising crop yields on the farm. During the 10th Five-Year Plan period yields of nearly all the crops on the farm began to exceed rayon-wide averages. In the first 2 years of the 11th Five-Year Plan period this gap in crop yields continued to widen in favor of the farm. Last year on this farm the harvest averaged 40.4 quintals of grain per hectare, 360 quintals of sugar beets per hectare, 222 quintals of potatoes per hectare, and 62 quintals of fodder units per hectare planted with better crops.

As noted previously, teams operating on collective contract principles demonstrate the great effectiveness of this progressive form of the organization and remuneration of labor in unstable farming zones as well. This was yet again confirmed by the speech of L. A. Liep, director of "Vedenovskiy" Sovkhoz, Krasnodar krai. On that farm one tractor brigade has been working on collective-contract basis since last year. It handles two grain crop-rotation systems comprising altogether 7,760 hectares of plowland. The brigade has comparatively recently started to operate on this new basis, but even now it is evident that it is working in a different manner, that it performs promptly and efficiently all the operations. Despite the extremely inclement local weather conditions in 1982, when there was no rainfall at all from 23 May until the day of harvest, the brigade harvested about 10 quintals of grain per hectare. Previously the harvesting yields in the presence of such drought had not been higher than 5 quintals per hectare.

The conference demonstrated yet again the importance of the collective contract system to the struggle to implement the national Food Program and to fulfill economic and social tasks of the 11th Five-Year Plan.

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#### TYPES OF AGRICULTURAL TRACTORS SPECIFIED

Moscow *TEKHNIKA I VOORUZHENIYE*: "TRAKTORY DLYA SEL'SKOGO KHOZYAYSTVA" in Russian No 3, Mar 83 pp 2-3

Article by N. Mel'nikov, deputy chief of Machinebuilding Administration of Department of Tractor and Agricultural Mechanization of the USSR State Committee for Science and Technology: "Tractors for Agriculture"

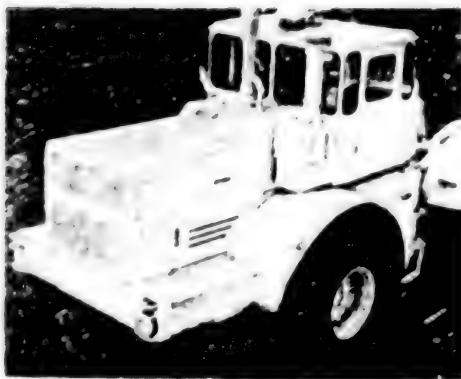
Article on tractor and agricultural machine building provides further growth of heavy-duty tractors of the type MTZ-80, MTZ-82 and others as well as of the entire complex of machines and tools for them.

from Basic Directions of Economic and Social Development of the USSR During 1981-1985 and for the Period to 1990.

In the USSR Food Program for the Period to 1990, approved by the May (1982) Plenum of the CPSU Central Committee, it is emphasized that a most important condition of its realization is acceleration of scientific-technical progress, highly efficient use of the production potential and a stronger material-technical base for agriculture and all sectors of the agroindustrial complex on the basis of further development of mechanization and chemicalization of production and wide-scale land improvement. Major attention is to be paid to providing tractors for agriculture. During the 10-year period, it is planned to supply 3,740,000-3,80,000 of them.

The agricultural tractors produced by our industry can be broken down into general purpose, all-purpose row-crop and swamp-golf, [for agriculture] tractors. The most widespread model of agricultural tractors of traction class 10-15 kW is the wheel type all purpose row-crop MTZ-80 tractor. Equipped with a 2400 cc diesel engine and a range of units, this tractor makes it possible to perform, presowing, cultivation of the soil, sowing and interrow cultivation of the crops, potato planting, transplanting, weeding or inter-row dry farming, taking in of the harvest and so on. It is also possible to use it for transport, road construction and other work.

The tractor has a three-cylinder with a power of 22.34 (30 hp) and 1110 cc engine with a fuel consumption of 24 g/kWh. Customers may also order a modification of the tractor (MTZ-80L) with a D-240L engine equipped with a starting motor.



T-30 Tractor



T-150 Tractor



T-4A Tractor

The MTZ-80 tractor has power and position control of the hydraulic suspended system, automatic locking of the rear-axle differential and a 2-speed power take-off shaft. The tractor is provided with an additional reduction gear (for the gear shift box and reduction gear [khodoumen'shitel']) and pneumatic brake cylinders for trailers. The gear shift box (KPP) is mechanical with 4 forward and 2 rear gears. A step-down reduction gear doubles their number. The track of the rear wheels is maintained within the limits of 1,200-1,800 mm. and that of the front within the limits of 1,200-1,800 mm. A caterpillar belt is installed on the wheels of the MTZ-80 (MTZ-80L) tractor, increasing its mobility on moist and friable soils as well as on snow.

The tractor's cabin is air-tight and of enhanced rigidity. It is equipped with a heating and ventilation system, a single seat with a hydraulic shock absorber, which is adjusted for the weight and size of the tractor operator.

The operating weight of the tractor is 3,370 kg. It can cross a furrow with a depth of up to 0.85 m. The tractor temperature operating limits are from -40°C to +40°C.

The interpillar tractor of tractive class 3 (30 kN) does a variety of work, including field preparation, and road work. It is equipped with a 6-cylinder 4-1 diesel engine with a power of 66.2 kw (90 hp) and with fluid cooling. It is started from the driver's seat with the help of a starter motor with an electric starter.

The tractor has two single-stage planetary turning gears with belt brakes. It has interpillar movement with 4 balanced suspension carriages.

The tractor's completely metal air-tight cab is equipped with a heating and ventilation system. The seat is cushioned and is adjustable to the size and shape of the driver.

The tractor has a detachable-unit [razdel'no-agregatnyy] hydraulic system and a four-point plate mechanism with an automatic coupler, which makes it possible to connect machines and tools according to two-point and three-point schemes, as well as a hitching assembly.

The operating weight of the tractor is 7,100 kg, the depth of a crossable field is 1.0 m.

The interpillar tractor which is analogous in purpose also belongs to the interpillar hook traction class. It has an SMD-60 6-cylinder V-type diesel engine with turbocharger, nominal power of 110 kw (150 hp) and fluid cooling. The gear box is mechanical and has four modes (working and transport modes and gear-drive and speed-reduction modes). The box provides four gears for each mode, a drive for the transmission hydraulic system pumps and rear suspension drive, and also a drive for the independent power take-off shaft.

The tractor can make a turn two ways: by engaging different gears in the turning mechanism within the limits of the given mode (fixed turning radius) and by partial or complete disengagement of the friction clutch in the gear shift box (free turning radius). The former method ensures passability of the tractor under roadless and deep-snow conditions. The second method is usually resorted to in the case of small turning radiuses, for example, in U-turns.

The tractor cab is of the closed type with a heating and ventilation system and a glass louvre for the windshield. It has installed two soft seats.

The driver's seat is cushioned and can be adjusted to the height and size of the driver.

The tractor has an operational weight of 7,000 kg and a fordable depth to 1 m.

An improved version of this tractor, the T-150R, is compatible with the same machines as the T-150. Moreover, it can be used for transport work with trailers and semi-trailers with a load capacity of up to 20 tons on dirt and hard roads. The power of the D90-2 engine installed in the tractor is 121.3 kw (165 hp). It differs from the SMD-60 engine in possession a faster rotating

crankshaft frequency. The T-150K tractor is equipped with a pneumatic compressor.

The tractor's gear shift box is a mechanical three-range [trekhdiapazonnaya] with permanently engaged gears, hydrotightening friction clutches and reduction gear. In combination with the transfer case [razdatochnaya korobka], such a gear box provides 12 gears for moving the tractor forward and 4 for moving it in reverse. Gears can be shifted while moving without interrupting the power flow because of the hydrotightening friction clutches mounted on the secondary shaft. The gear box is operated with the help of a hydraulic drive.

The weight of the tractor is 8,135 kg. It has a fordable depth of 1 m.

The T-4A tractor is of tractive class 4 (40 kN) and is intended for the performance of agricultural (deep plowing, continuous cultivation, sowing and harvesting of agricultural crops) trench and earth-digging work. It is equipped with an A-01M 6-cylinder diesel engine with fluid cooling and a power of 95.6 kw (130 hp). The combustion chambers are located in the piston heads.

The gear box with reversing reduction gear makes it possible to have 8 forward speeds and 4 reverse speeds. The planetary gear ensures smooth turning of the tractor.

The cab is closed-in, entirely of metal, with two seats. It is equipped with a heating and ventilation system. The seating is cushioned and is adjusted according to the size and height of the driver.

The fluid prestarting heater is designed for heating the engine at an air temperature below  $-5^{\circ}\text{C}$  prior to starting and reducing the heating up time after starting and also for maintenance of the heat regime when the engine is not working during long stops under low-temperature conditions.

The operating weight of the tractor is 8,400 kg. The tractor can cross fords of a depth of up to 1 m.

The Kirovets K-701 wheeled tractor has a tractive power on the drawhook of 50 kN (5 tractive force). It can perform various agricultural, road construction, land-improvement, earth-digging and other work.

All 4 wheels of this tractor are drive wheels. It is equipped with a YaMZ-240B 12-cylinder V-type engine with a nominal power of 198.5 kw (270 hp) and an electric starter. A prestarting heater is used for starting in cold weather. The engine is supplied with a gear for disconnecting the fan, which ensures an optimal heat regime for different loads and temperatures of the surrounding air.

The gear box provides for movement of the tractor on 4 forward regimes and backward on 2 regimes. Each regime has 4 gears which are shifted without interfering with the power flow. The drive axles are equipped with automatic locking of the differential. The rear axle can be disengaged.



The tractor is equipped with a detachable unit system, a three-point hinge mechanisms, a trailer clamp and a hydraulic hook.

The tractor's weight is 13,500 kg. Maximum weight of towed equipment on wheels is 323,000 kg. Fordable depth is 1 m.

The T-130 tractor, possessing a tractive force on the hook of 60 kN (6 tractive force) is meant for earth-digging, trench, land-improvement, road, grading and agricultural (plowing, sowing, continuous cultivation) work. It has a D-160 4-cylinder 4-stroke engine with a power of 117.6 kw (160 hp) with a turbocharger. The combustion chambers are in the piston heads. The starting engine is a carburetor model with an electric starter.

The transmission is mechanical, multistage with a dry constantly closed two-plate clutch, a four-shaft gear box, a conical main gear, multiplate dry side friction and a coaxial final reduction assembly. The operation of the steering clutches is performed with the help of hydraulic servomechanisms.

The tractor is equipped with a detachable-unit hydraulic system, with forward and rear hinges and a pendulum or rigid attachment device.

The cab seats two, is of the closed-in type and is mechanical with head and sound insulation.

On order of the customer, the tractor can be equipped additionally with a prestarting heater, a heater, overload shearing clutches providing a covering for the hydraulic hoses when they are supported, spurs [shpory] for iced roads, shoes for use on asphalt and a canopy which can be used in place of the cab.

For the complex of operations performed in the development of peat and swamp land, as well as in land improvement operations, the T-130B tractor is put out. It has wider caterpillars. The weight of the tractor is about 14,000 kg. Fordable depth is up to 1 m.

Tractor builders are working on the creation of new tractor designs, whose commercial production is planned for in the 12th Five-Year Plan. Specifically, general-purpose row-crop tractors are being developed of tractive class 2 (20 kN) with an engine with a power of 110 kw (150 hp). Such tractors in the cultivation and harvesting of row crops will make it possible to increase labor productivity 1.5-2.0 fold and to raise the quality of work.

There are also being designed new greater-power models of wheeled tractors with a tractive power on the hook of 14 kN (1.4 tractive force). An engine with a power of 74 kw (100 hp) is planned to be used with them.

A new general-purpose caterpillar tractor is being designed of tractive class 3 (30 kN). It will be used with the same agricultural machinery as in the case of the T-150 and T-150K tractors. It is planned to employ on it a 6-cylinder V-type engine with a power of 125 kw (170 hp) with liquid cooling and a turbocharger and intermediate cooling of the compressed air. The tractor's transmission will use a torque converter providing with an optimal load

of the engine automatic control of speed of movement depending on the magnitude of tractive resistance.

Tractor-building enterprises and organizations are planning to carry out a broad complex of measures aimed at improving designs of tractors that are being produced. There will be a significant increase in the operating life of the more responsible components of engines and transmission units, and their relative metal intensiveness will be reduced.

In a word, everything is being done for tractor and agricultural machine-building workers so that they can successfully fulfill the task set for them by the USSR Food Program.

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